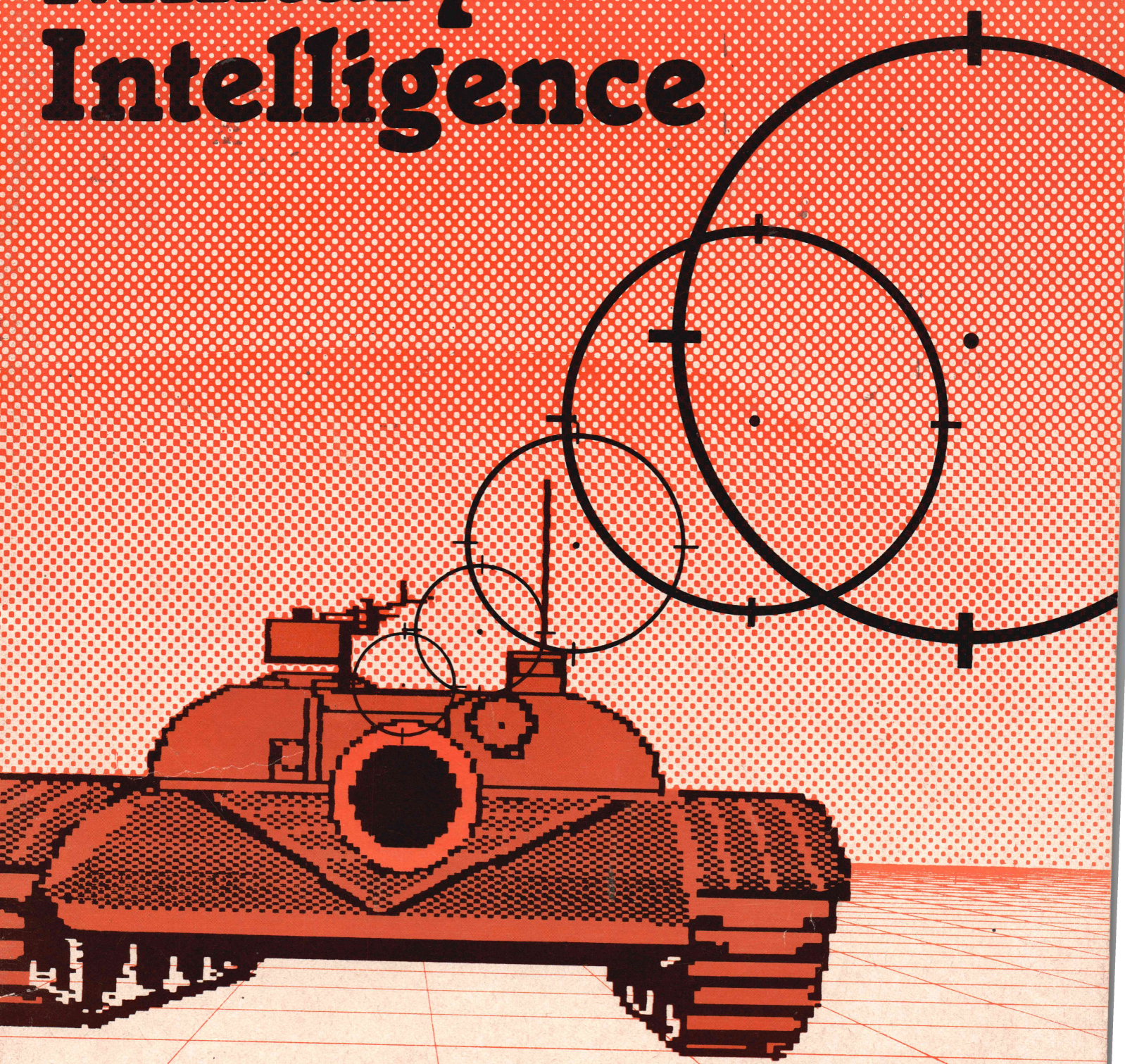
Military Intelligence

October-December 1983



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Military Intelligence

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The cover design by Thomas Daley is a computer generated image of an OPFOR adversary specifically produced for this High Technology issue of ***MILITARY INTELLIGENCE.***

from the Commander

by Brig. Gen. (P) Sidney T. Weinstein

Various forms of new technology are emerging within Military Intelligence each year. It can be difficult to adapt to technological change, but the fact remains that we as Military Intelligence professionals must be prepared to handle it.

Here at the Intelligence Center and School, very important work is underway in applying new technology. These efforts range from new methods for developing analytical skills, to computer assisted instruction packages and software for the new MICROFIX family of microprocessors expected in the field soon. We are trying to balance field requirements which can be met with available technology today, while establishing programs to meet future requirements.

Examples of meeting near term requirements include the multimedia technical support package providing a simulated training environment for Combat Electronic Warfare Intelligence organizations and computer based education modules, which will assist in teaching Threat organization, equipment, tactics and doctrine. The first increment of the latter, called "THINK RED," was recently sent to the field. Future efforts involve developing applications for artificial intelligence and the use of speech synthesis to provide a langauge skill sustainment capability.

We believe that USAICS is in the forefront of the total Army effort in developing and using advanced approaches to meet the future needs of Military Intelligence. This issue of your magazine provides a broad sample of what is happening at the HOME OF MILITARY INTELLIGENCE.

from the CSM

CSM Sammy W. Wise recently assumed responsibilities as command sergeant major of the U.S. Army Intelligence Center and School. "Military Intelligence Magazine" spoke with Wise about a number of topics. Wise will continue to share his thoughts with readers in future issues of **Military Intelligence.**

What do you see is your role as Command Sergeant Major of the Intelligence Center and School?

In this position I wear several hats; first, as the Center CSM, second, the "school" CSM at Fort Huachuca, third, the "schools" CSM, which includes all four campuses located at Fort Huachuca, Ariz., Fort Devens, Mass., Goodfellow Air Force Base, Texas, and Pensacola, Fla., and a fourth hat, which I created, as the MI Branch CSM for the Home of Military Intelligence. When wearing the fourth hat, I am charged with providing recommendations to the USAICS Commander on proponency issues affecting MI personnel. Proponency was clearly explained in the July-September issue of "Military Intelligence Magazine."

What are your top three priorities as USAICS CSM?

First, convince the rest of the Army that MI personnel can "soldier" with or better than the best. Second, evaluate and improve the effectiveness of the MI NCO Corps Army-wide. Third, strive to provide the best ever technically trained, physically fit, motivated soldiers who possess those basic common soldier skills needed to survive on the battlefield.

What are your thoughts on the quality of MI soldiers being sent to the field?

We are not where we would like to be, but great strides have been made in the last couple of years. We must try to understand some of the reasons why the past training was not the best that could be provided. Budget constraints, personnel shortages (especially in the middle level NCO trainers), and the lack of emphasis on the need for intelligence during peacetime, were among the reasons. But rest assured that the time is right now for us to provide the best trained soldier ever. Our senior civilian and military leadership have made training one of their top priorities. New training methods, higher standards, modern equipment and Soldierization Programs in the schools have provided better trained MI soldiers to the field. The real test will be the integration of recently trained soldiers, officer and enlisted, into a unit and their development into tomorrow's tactical and technical leaders. We still have a few officers and NCOs left in MI that refuse to accept the fact that we must think "tactical soldiers." All officers, warrant officers and NCOs **must** be integrated into common skills training.

What are your thoughts on the Army's physical fitness and weight control programs?

Today's Army places unique physical and mental stresses on individual soldiers and units. Exercise is an excellent stress reduction technique; but if improperly done, it can actually increase stress. Our programs must be well-balanced and designed to ensure soldiers are physically and mentally capable of sustained peak performance, both individually and as a team, under combat conditions. We have too many "commander's Olympic running programs." I have personally observed too many "runners" who lack the ability to do push-ups, sit-ups, or complete conditioning drills. We must also place special emphasis on the physical development of soldiers with limiting medical profiles and those over 40 years of age. Our lives may depend on the soldier that we have allowed to continuously drop out of the run after the first half mile. We must have supervised profile and remedial programs instructed by physically fit officers and NCOs in the unit, not those on profile or remedial training. Our negligence in ensuring the full physical development of the entire team may result in combat losses which cannot be tolerated.

An effective weight control program follows naturally from an effective physical fitness program. Just as I would concentrate on improving marginal performers in physical fitness, I would encourage soldiers to strive for their "ideal" weight. Overweight conditions and crash dieting are both stressful and physically harmful. Our senior leadership has made proper physical fitness essential to a successful career. We must consider the physical condition of subordinates as part of professional development programs.

All leaders must set the example in both physical fitness and weight control. We cannot turn our heads from the issue.

In closing, is there anything you would like to add?

I look forward to the many new and exciting challenges associated with this position. Military intelligence is on the move and how fast and far we go depends on every MI officer, NCO and civilian professional on the team. **Be all you can be.**

FEEDBACK

Electromagnetic Pulse

Editor:

*Capt. Peter C. Paras's "Electromagnetic Pulse" **(Military Intelligence, April-June 1983)** article was impressive, especially the recommendation to avoid proximity to any large collector such as long cable, fencing, or railroads. The SSO DA 02 June 83 requirement for triple strand concertina around each tactical field SCIF may have a greater effect than just keeping out unwanted visitors. EMP may yet provide the final resolution to our communication problems. Hopefully it won't affect our primary system (a courier in a jeep).*

CWO 3 Stephen E. Watkins
Chief TCAE, 107th MI Battalion
(CEWI)

Principles of IEW

Editor:

*In the article "The Principles of Intelligence and Electronic Warfare" by Capt. Jonathan S. Lockwood **(Military Intelligence, April-June 1983),** the author has flagrantly contradicted doctrine.*

In the expostulation of his third "principle," ("Use of all assets efficiently, but not predictable") Lockwood states, ". . .it is not possible for the G2 to attempt to. . .jam every emitter. . . The G2 decides what his priorities are. . . consults with the G3 to allocate his limited resources. . . " The author implies that offensive EW is the responsibility of the G2 when in fact, it falls under the purview of the G3 for staff supervision. The G2 does not allocate resources in combat; the commander has that responsibility. Based on the commander's concept and input from his staff and subordinate commanders, allocation of assets is directed by the G3 for the commander.

Principle five's ("Determine, locate, and attack those enemy targets most valuable to him") narrative states, "IEW assets should be tasked to find the targets and notes(sic) considered most important to the enemy commander in carrying out his mission." Lockwood is again arrogating the commander's prerogative to the intelligence staff officer. IEW assets should be tasked to locate targets considered by the friendly commander, not the enemy, most important for succeeding in his mission. These targets may, admittedly, be of prime importance to the enemy commander as well, but commanders, not intelligence staff officers, determine target priorities.

Lockwood's effort to define cardinal principles of IEW operations is laudable, but not acceptable, the principles must be in accord with U.S. Army doctrine. It is difficult enough trying to get the combat arms to employ EW assets doctrinally without members of the IEW community publishing articles contravening that doctrine.

Capt. Wayne A. Mastin
EW/Crypto Officer
105th MI Battalion (CEWI)

OV-1 Mohawk

Editor:

*I read with great interest the article "Replacing the OV-1 Mohawk with the A-10" by Capt. Lauran Paine, Jr., **(Military Intelligence, April-June 1983).***

While I do favor the idea of replacing the OV-1 with the A-10, I do not favor the idea of replacing "the enlisted man in the back" with a commissioned officer. My reasons are several.

First—the 96H/ /F who currently "loads" the reconnaissance system is already trained in the critical areas of surveillance. Specifically—the flying, navigation and interpretation skills that would have to be taught to these Advanced Course graduates.

Second—the crews (not individuals) who currently fly the IMINT surveillance missions are collectors, not analysts. The reason for this is simple - in an aircraft the size of the OV-1 or A-10, there is neither the time, space, access to other intelligence or, most importantly, the need to be analysts. The SEMA mission is collection, not analysis.

Third—the enlisted man who currently flies is trained in intelligence. Furthermore, with the approval of the 96H MOS restructure, both the quality and quantity of that training will improve.

Finally—the Army spent a lot of money training the 96H to fly, further; it spent a lot of money training those 03's to function effectively on the ground. Why not let these people do what they were trained to do?

Sgt. Paul J. Cook
Company C, USAICS

The 97B Dilemma

Editor:

This letter is in response to the unsigned article in your October-December 1982 issue entitled "The 97B Dilemma." It is too bad that the name of the author(s) was not listed because it was an excellent article and the author deserves the credit for it.

The recent "off the street" recruiting effort of counterintelligence personnel actually began much earlier than the January 1981 date cited in the article; it was a least during the spring of 1979. The idea to recruit potential counterintelligence agents "off the street" was not a new one. During the 1960s and early 1970s, the U.S. Army had an outstanding "off the street" recruiting program to enlist people into the counterintelligence field. One of the complaints about this program was that, since the new counterintelligence agents were being assigned to fill slots in units whose principal mission was to conduct personnel security investigations and, hence these agents were wearing civilian clothes and serving, for the most part, in non-tactical assignments, the counterintelligence agent did not know a lot about the Army and did not have enough "Army" experience.

With the creation of the Department of Defense Investigative Service, the requirement for the military services to conduct their own personnel security investigations was gone, at least in CONUS. The Army turned to placing more emphasis on filling the tactical MI units with counterintelligence agents. The "off the street" recruiting effort was done away with and "in service" recruiting got all the emphasis. One of the hallmarks of the "in service" recruiting program was the requirement that the applicant must have completed two years of

active duty before being eligible to transfer into MOS 97B. This was a well-intentioned attempt to answer the objection about counterintelligence agents not knowing enough about the Army or having "Army" experience. The "in service" recruiting effort obviously fell short of the goal of supplying the Army with a sufficient number of counterintelligence agents to fill all of the various TOE and TDA slots, particularly the TOE slots.

Hence, the return to "off the street" recruiting. This effort put part of the emphasis where it belonged-those recruited "off the street" were to be assigned to tactical MI units. However, I believe that there were several weaknesses in this program: screening for suitability was done while the enlistee was in Basic Training; there really was no "job description" for the entry level MOS of 97B10; and, finally, the applicants or enlistees were not told that they were being assigned to tactical units but were led to believe that they were to go to strategic level units.

The screening of these enlistees was conducted by personnel assigned to counterintelligence resident offices at the Basic Training site and was not started until after the enlistee had already started Basic Training. This screening weeded out about half of the enlistees because of a demonstrated inability to communicate effectively in writing or for suitability reasons and even some for motivation reasons. Consequently, less than half of those enlisting for training in MOS 97B were making it to school. Additionally, only about half of the remainder made it through the training successfully. To eliminate this problem, in October 1980, DA did away with the screening process, lowered the entry age to 18 (it had been 22 in the mid-1960s, then was lowered to 21), and split the counterintelligence training for 97B10 personnel so that there was an initial 10-week training period (which did not include any investigative training and emphasized tactical counterintelligence and operations security support) and a subsequent 18-week training period for those over 21 who had served at least one year's "apprenticeship" in a tactical unit. In the interim period between receiving this training, 97B10s were being assigned to tactical MI units who then had the responsibility to screen their 97B10s for subsequent training as well as to prepare them for this subsequent training. Unfortunately, the preparation was not uniformly applied and ranged from non-existent to about fair, and there was a delay in getting the 97B10s back to the school for the additional training.

Your article covered the problems of the lack of a 97B10s "job description" and its subsequent problems very well.

At present, the Army is at the point of trying to decide what to do next about the 97B career field. As your article mentioned, many of those eligible 97B10s are now being sent back to the school to complete their training. However, for some of them this training is coming during their last year or at least the last half of their term of service and, unlike those "in service" transfers who incur a two-year service obligation by going to the schools, the 97B10s are not being required to stay longer than their present ETS. Part of this, I am sure, is done to satisfy the objection that the training (all of it) was part of their enlistment contract to begin with and therefore should not require any extension of obligation. But the effect "in the field" is a lot of personnel turbulence—having newly assigned counterintelligence people get out of the Army shortly after reporting in to their new unit. And believe me, reenlistment pitches are of little avail to a soldier who perceives that he has been used by the Army (whatever his MOS is) and cannot wait to get out. The result of all this is: shortly there will be a lot of vacancies in MOS 97B and the Army has stopped "off the street" recruiting. It sounds to me as through we are back to square one: how to get more 97Bs.

Your article offered several proposals or solutions to this problem but I believe that only one of them is viable in terms of common sense, cost effectiveness, timeliness, and ease of implementation. I think that the Army should reinstate the "off the street" recruiting program for 97B10s with the following changes:

1. Eliminate the so-called Counterintelligence Assistant. MOS 97B is a counterintelligence agent and a 97B10 is a counterintelligence agent whose rank is between E1 and E4. PERIOD!

2. Make the minimum entry age limit 21.

3. Establish one course of training for MOS 97B—everyone, regardless of manner of entry into the MOS or rank, goes to that course. Upon successful completion of the training, the graduate is awarded MOS 97B, is eligible to be issued badge and credentials and is authorized to conduct investigations.

4. Prior to being allowed to enlist for MOS 97B10, an applicant must be screened by an accredited, experienced counterintelligence agent. This screening should probably be conducted at the MEPS. Screening must include a writing examination (preferably by submitting essays or compositions, as is required for "in service" transfer) as well as an in-depth personal interview to screen out those with apparent suitability or motivation problems.

5. Require the "off the street" applicant to sign a statement of understanding which states that award of the MOS is dependent upon a favorable Special Background Investigation and successful completion of the course of training; further, this statement must say that selection for entry into the MOS (that is, to permit enlistment for the training) is dependent on selection by a DA screening board (which would be conducted by MI Branch at MILPERCEN). The DA screening and acceptance must be completed before allowing the applicant to enlist. Those applicants who are eliminated by the counterintelligence agent who screens at the MEPS will not be considered by a DA board.

6. Products of the "off the street" recruiting effort will be assigned to tactical units for at least one year following graduation. Those who request assignment to specialized units (for example, an Airborne or Special Forces unit, one which requires a specific foreign language or another specialized skill) should be given full consideration for assignment to take the specialized training en route to their unit, if this is appropriate.

7. Prior to instituting any recruiting program, DA/MILPERCEN (MI Branch), INSCOM (the Army's major intelligence command and the source of the applicant interviewers and screeners), the Counterintelligence Department of the Intelligence School, and the Recruiting Command must sit down, talk and work out kinks to be absolutely certain that everyone pursues the same goal.

8. Give this program a lot of publicity in the Army, in the counterintelligence community and in recruiting circles to ensure that only the best applicants are referred for screening.

"Off the street" recruiting can be a very vital source of counterintelligence agents, if sufficient care and forethought are applied to the situation.

Capt. Michael F. Dilley

By 1st Lt. Deborah Garvey and Ms. Gail Picard

AIRLAND BATTLE 2000

AirLand Battle 2000 is a style of waging war utilizing all the tools of combat that presents a variety of situations to the enemy more rapidly than he can react to them. This concept is a direct result of the Army's adoption of the Concepts Based Requirements Process and will be the basis of all doctrinal, structural, and materiel developments from 1995 to 2015. Furthermore, the Intelligence and Electronic Warfare Mission Area Analysis process will be used to validate new materiel and technological requirements that appear as the AirLand Battle 2000 concept is implemented. As it is implemented, the concept will be the driving force behind force design initiatives concerning increased mobility, rapid deployment, improved communications and more capable computerization.

The key to success in AirLand Battle 2000 is maneuverability. It gives the commander the edge in concentrating or dispersing forces in a way designed to confuse and disadvantage the enemy. Successful use of maneuverability lessens battle costs in terms of men and materiel. Mobility, in combination with fire, flexibility of thought, plans and operations, and the application of the principles of mass and economy of force are all needed for the successful application of this concept.

The number of potential draftees in the United States and the Soviet Union is decreasing significantly. The United States military must compete with private industry for inductees and careerists. The Soviet Union, on the other hand, can conscript the people it needs, but at a high cost to defense and non-defense industries. This manpower shortage is one of the factors resulting in the Soviet's use of surrogate forces. Use of surrogates has resulted in the emergence, worldwide, of several new, highly skilled, well equipped forces; some of them have or are developing a nuclear capability.

The maneuver regiment will be the tactical echelon of AirLand Battle 2000. It will be a regiment of 4,000-6,000 persons and will resemble a Division 86 separate brigade. It will be a combined arms force which has been shown in two variations. The heavy regiment will be primarily an armor-heavy force complemented with infantry forces. The medium regiment will be a mechanized infantry force with some armor assets. A third, light, regiment is currently being developed. It is envisioned as a special operations/airborne-type force.

While regiments will have a wide complement of organic combat support and combat service support elements, support will be as scant as possible to keep the high degree of flexibility and mobility necessary to operate in the fluid AirLand Battle 2000 environment and keep a "tooth-to-tail" ratio of about seven-to-one.

The regiments will be separate fighting forces, widely dispersed on the battlefield and oriented on fast moving, fluid enemy forces rather than on a piece of terrain. There will be little or no flank or rear area security available. The non-linear nature of the battlefield means that there will be no clearly defined FEBA or FLOT but a broken and twisted line of conflict or contact.

The Land Battle Force will be a command and control mechanism which will be deployed and activated on order of the AirLand Force commander. If the number of regiments under an AirLand Force increases or the battlefield situation escalates, the ALF commander may feel that command and control to the regiments is significantly stressed and degraded to warrant an intermediate level of command and control to coordinate maneuver.

To do this there are two LBF staffs identified within the ALF. These staffs can be deployed when and where the ALF commander decides. Since the LBF does not have organic combat, combat support, or combat service support assets, it will be deployed where suitable protection can be afforded it.

The Land Battle Force will consist of a headquarters element of 50 to 100 persons. It will be a G2/G3 staff, augmented with representatives from other staff areas. It will be tailored to meet the specific needs of the regiments it controls. The LBF provides command and control for several regiments which equates to today's division.

The AirLand Force equates to today's corps as an operational level force which functions as the connecting link between the strategic and tactical levels. The ALF is where campaigns are planned and conducted and joint and combined assets are fused to defeat the enemy.

The ALF will consist of a 125,000 to 150,000 man force having organic combat, combat support, and combat service support assets sufficient for its own needs and those of its subordinate commands. The balance of the force will be divided into 12 to 18 regiments. The two ALF deputy commanders for maneuver will become the LBF commanders if that echelon is activated. The ALF is where information from national, joint, and combined assets will be fused.

The combined level, which has not yet been clearly defined, is envisioned as a strategic joint task force, organized when needed. Its mission is coalition warfare.

There are five principles necessary for the battlefield execution of the AirLand Battle concept. All five must be fully understood by commanders and battle staffs and must be appropriately integrated into all plans and orders.

Agility is the ability to see, analyze, decide, and act faster than the enemy. The right combination of maneuver, economy of force, and early identification of decision points will give us a qualitative edge and affect the enemy's ability to react. An off balance force is a weakened, easier to defeat force.

Initiative is linked with agility. Both are necessary components in the development of an offensive spirit. Initiative requires a constant search for windows of opportunity, chances to seek and retain the offensive. The decentralized nature of AirLand Battle 2000 requires that small unit leaders be able and willing to seize the initiative. Commanders are encouraged to take risks, but not gambles which risk soldiers and waste materiel.

Depth of the battlefield is significantly extended in AirLand Battle 2000. A battlefield extended to 300 plus kilometers, with non-linear frontage, widely dispersed, and fought with weapons having increased accuracy and range can only mean that we must see deeper, clearer, and faster than the enemy.

Time requirements are the need to see, shoot, and move faster than the enemy, and go hand-in-hand with requirements to see deeper. Interdiction is vital to success in AirLand Battle 2000. The faster and deeper we can interdict the enemy, the more successful we will be. Time, in the sense of properly orchestrated movement, is also vital. Fire on the enemy command post too soon and it will have time to recoup; too late, and it has already passed instructions to subordinates who can continue the battle without it.

Synchronization of force encompasses more than coordination. It implies a total, all pervasive unity of effort throughout the force. Every element at every echelon must have a full understanding of the higher commander's intentions.

From its inception, developing the AirLand Battle 2000 concept has been a process encompassing the entire force. Not only was a new concept for doing battle required for the light, medium, and heavy regiments, a new way of supporting battle was also

needed. And that new way had to be viable for all contingencies, in all climates and terrain, against any potential threat force. Any concept development for 21st century warfare needed a strong focus on new technology.

Each of the Training and Doctrine Command Centers and Schools was tasked to develop a concept for its functional area. The resulting document will include concepts for the three type regiments and the 11 functional areas under an umbrella concept for the total force.

The Intelligence and Electronic Warfare concept is a result of the Intelligence Center and School's participation in this development process. What follows is an overview of the IEW concept.

The Intelligence and Electronic Warfare Level II Mission Area Analysis identified four tasks inherent in the IEW mission which help to fulfill the commander's information needs or the commander's operational needs. These four tasks are: situation development, target development, IEW support to operations security, and electronic warfare. While the four tasks are the same in AirLand Battle 2000 as they are today, the techniques for fulfilling the commander's needs will change.

The AirLand Battle 2000 commander must know the enemy's strengths, weaknesses, locations, and intentions. With this intelligence the commander can plan his own scheme of maneuver. The commander's information needs are satisfied through situation development and target deployment.

Situation development is the big picture. It allows the commander to see and understand the battlefield as it currently is. He can also predict enemy intentions by processing information gained from intelligence sensors and correlating it with enemy doctrine, terrain, and the friendly commander's own scheme of maneuver.

Target development supports the destruction of the enemy by detecting, identifying, and locating enemy units and activities in sufficient time and detail to support effective attack. It is based on the situation development process, but adds the detail necessary for attack.

Electronic warfare actions and IEW support to OPSEC are the tasks which the IEW functional area performs in support of the commander's operational needs. These are the intelligence and electronic warfare actions which he needs to assist in the actual conduct of the battle.

IEW support to OPSEC provides the commander with the ability to see his force through the eyes of the enemy commander. IEW OPSEC support elements are capable of identifying friendly force vulnerabilities which can be seen by the enemy intelligence system and recommending countermeasures against enemy collection activities. The two facets of IEW support to OPSEC are counterintelligence and intelligence support to deception. Counterintelligence is the all encompassing term for countering enemy signals intelligence, imagery intelligence, and human intelligence. Deception, which is predicated on effective OPSEC, is the ability to protect the real while portraying the false.

Electronic warfare actions minimize the effective use of the electromagnetic spectrum by the enemy while enabling continued friendly use of the spectrum. Electronic warfare in AirLand Battle 2000 takes on a new and deadly character—the ability to destroy the enemy through the use of electromagnetic energy. Consequently, electronic warfare as it applies to killer electronic warfare devices (directed energy weapons) will fall within the purview of other battlefield functional areas. However, directed energy will also be of major importance in the IEW arena. Lasers will be used to counter enemy intelligence and target acquisition sensors through electronic component burnout, or blinding.

High power microwave, and nonnuclear electromagnetic pulse weapons will disrupt and degrade enemy electronic systems. The use of these weapons by other elements on the battlefield will require close coordination to insure that these tactics are not in conflict with the overall scheme of maneuver and command, control, and communications countermeasures strategy.

The maneuverability and fast-paced action of the maneuver regiment precludes the use of a complicated array of IEW ground and airborne assets. The IEW company at the regiment will become much more simplified organizationally. The IEW company has limited ground collection and jamming capability. Management, analysis, and technical support to IEW assets, and requests for nonorganic IEW support from the IEW regiment are done by the headquarters platoon. Manned and unmanned aerial collection and jamming support is provided by the IEW regiment at ALF. Once these aerial assets enter the maneuver regiment's airspace, the IEW company will assume control of the IEW systems on board the manned airframes. It will also assume control of both the unmanned airframes and on board IEW systems.

When the Land Battle Force is deployed, IEW personnel comprise the G2 section of that headquarters. The LBF G2 section will consist of ten to 15 people who are responsible for the coordination and evaluation of regimental IEW operations within the four IEW task areas. The G2 section personnel insure that the regimental IEW efforts are synchronized with the AirLand Force commander's scheme of maneuver.

AirLand Force IEW activities provide the broad battlefield picture which aids the commander in detecting or creating opportunities. Specific analytic techniques and sensor results are required to accomplish this task. These capabilities are available to the AirLand Force commander in the IEW regiment which provides IEW support to the AirLand Force through its organic intelligence, location, surveillance, and target acquisition data, and its electronic warfare support assets. It is capable of covering the entire area of operations with its organic assets assisted by coverage through its access to multiservice and national assets.

The scenario which follows portrays IEW assets on the battlefield of the 21st century. It brings the four IEW tasks and the IEW assets together in the framework of the IEW organizational structure which supports AirLand Battle 2000. Two things must be remembered. First, on the non-linear battlefield, friendly forces may orient the bulk of their combat power in one direction but their area of operations will extend beyond that orientation. Secondly, although threat forces are not depicted here, one must imagine that they may be anywhere, including within, rather than in front of, the regimental areas. For that reason sensor

placement may seem, by today's doctrine, to be improperly placed. It is, in fact, placed where threat forces are projected to be.

In the overall layout of this scenario, the combined headquarters and the theater base, which are activated when there is more than one AirLand Force, have been established. AirLand Force 51 is deployed to stop the enemy advance from the north. In AirLand Force 52, Land Battle Forces Alpha and Bravo have been deployed to stop the enemy advance from the east and south. Regiment 5 is an independent regiment under the direct control of the AirLand Force. Protection for the AirLand Force operational base is provided by Regiment 12.

Regiment 4 has four maneuver battalions deployed. The regimental IEW operations base is located at the regimental tactical operations center. The information and intelligence flow discussed in this scenario is the same regardless of the type regiment being supported.

Through the AirLand Force, the maneuver regiment receives intelligence coverage of its area of operations from multiservice and national assets. This data is received and processed by the AirLand Force IEW analysis element and disseminated to the appropriate Land Battle Forces and regiments.

Both manned and unmanned aviation support is provided to the maneuver regiments by the Aerial Exploitation Battalion of the AirLand Force IEW regiment.

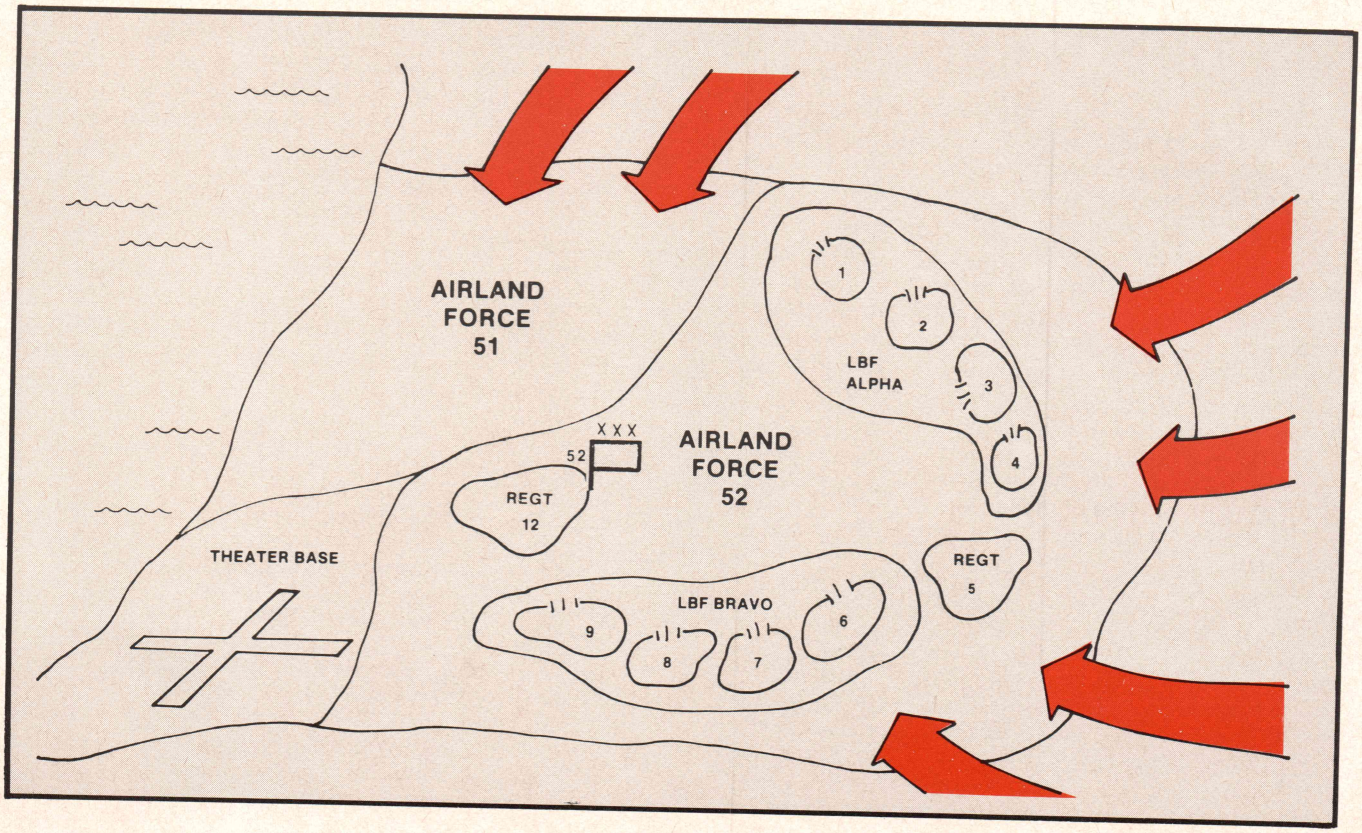
Results of UAV missions are downlinked directly to a ground control station located in the maneuver regiment's area of operations. This ground station acts as a filter before the UAV data is fused with other intelligence at the analytic element within the maneuver regiment's IEW operations base.

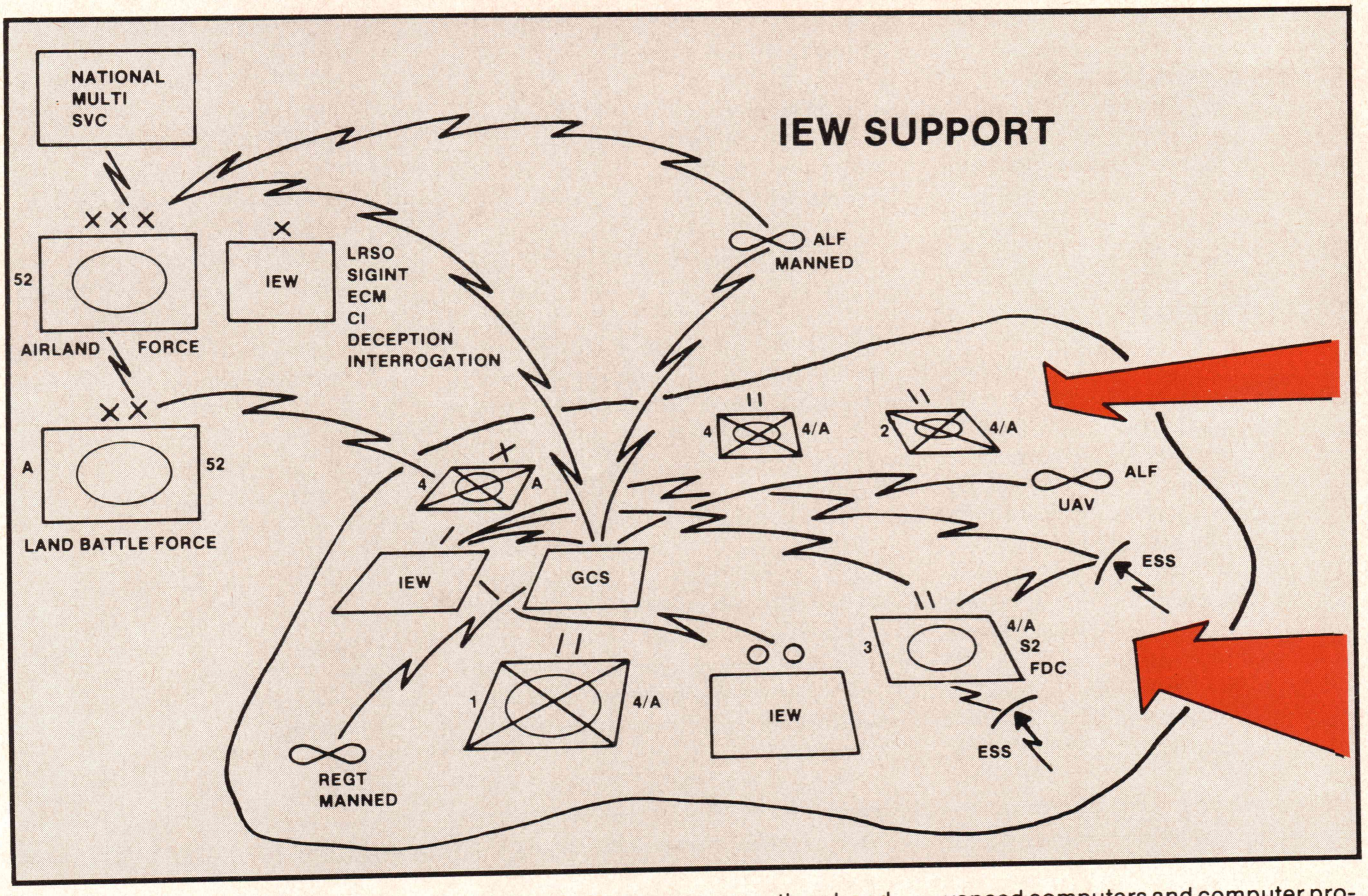
The regiment's IEW ground support provides indications and warnings in unoccupied areas, electronic warfare capabilities, and limited communications intercept. These assets are tasked by and reported to the IEW operations element at the regimental headquarters. IEW ground sensor support also includes the use of an elevated sensor system to provide locational information for targeting purposes directly to the maneuver battalion weapon systems.

The battalion S2 also uses data from the elevated sensor system to accomplish limited situation development, target development, IEW support to OPSEC, and electronic warfare tasks. These systems are tasked by the battalion S2s and receive technical support from the regimental IEW company's operations element. As the elevated sensor system sends information to the battalion S2, the data is simultaneously sent to the IEW operations element for integration within the total IEW data base.

The G2 element at the Land Battle Force disseminates to and receives from the regiments the intelligence required to coordinate the regiments' assigned plan of action. The Land Battle Force G2 element may request additional IEW support for specific regiments from the AirLand Force if required. The G2 element consists of work stations only which insure that all assigned regiments are conducting their IEW efforts in consonance with the overall AirLandForce scheme of maneuver.

At the AirLand Force, the IEW Operations Company receives intelligence from national, multiservice, adjacent, and organic assets. This intelligence, in addition to assisting the AirLand Force commander in planning his own scheme of maneuver, is pushed to the Land Battle Force(s) and regi-





ments impacted by that data.

The IEW data base is a large distributed system wherein intelligence and sensor data are accessible to the IEW analytic element at the AirLand Force and, simultaneously, to regiments requiring that data.

The AirLand Force IEW Regiment has organic Long Range Surveillance Operations and aerial assets in support of the AirLand Force and, on an as needed basis, to the regiments. The IEW Regiment also has some ground SIGINT collection and jamming capabilities which operate in support of the AirLand Force. Included in the IEW capabilities at the AirLand Force are interrogation, counterintelligence and deception.

Mobility and firepower are the pervading philosophies of AirLand Battle 2000. To ensure operational and tactical success on a worldwide basis, the IEW system must see the enemy with precision, predict his intentions, and disseminate the information quickly. The maneuver commander must be able to see and understand the battlefield; he must be able to act faster than the enemy can react. Real-time intelligence from sensor to user, with increased level of detail, is the key.

New techniques and technologies which allow the four IEW tasks to be performed more quickly and more accurately must be available to the IEW community. We must do everything possible to hide our units on the battlefield by becoming invisible to the enemy through the use of stealth techniques. We must use advanced computers and computer programs to assist the analysts and operators in coping with the large number of targets on the battlefield. This requires that the computers become smarter through the use of artificial intelligence tecnhiques and the use of very high speed integrated circuits.

Along with the stated need for better IEW products, there is also a need to keep the IEW elements small and less complex in order to have the mobility and flexibility necessary to move in concert with the forces they support. The development of robotic reconnaissance vehicles, artificial intelligence, directed energy, and a commonality of equipment, procedures, and communications will assist IEW to meet the challenges of the battlefield of the 21st century. ★

1st Lt. Deborah Garvey is a 1980 graduate of officer candidate school with nine years of military service, and is a Tactical SIGINT/EW officer. She is the primary action officer for articulating IEW support to AirLand Battle 2000 and has worked on its development for the last two years in the Directorate of Combat Developments, USAICS.

Ms. Gail Picard is an Intelligence Research Specialist (Intern) assigned to the Directorate of Combat Developments, USAICS. She is a graduate of the Military Intelligence Officer Advanced Course. Previous experience includes active duty as an intelligence analyst.

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EW TEMPLATING

J-JET

Joint Jamming Effectiveness Templates (J-JET)

by CPT Thomas P. Johnson

'It's 0800 in the DTOC and the G3 has just tasked the electronic warfare officer to support the 2nd Brigade's counterattack. The EWO notes that he hasn't any EW equipment in the brigade's sector. He coordinates with the CEWI elements in the DTOC and discovers that one TLQ-17 is available for the mission. The CEWI personnel suggest that the enemy's call for fire nets, whose frequencies and call signs are known, be the priority targets for the TLQ. The EWO agrees and gives guidance on secondary targets. So far so good. The question of where the TLQ is to deploy comes up. The EWO does a quick map analysis and determines that four friendly hill masses in the area have line-of-sight to the targeted receivers. The decision is made to position the TLQ on the highest hill mass since it provides the greatest line-of-sight coverage. The TLQ deploys to this hill and commences jamming when the counterattack starts. However, the referees report no jamming. The TLQ operator's log confirms the ineffectiveness of the jamming. What went wrong?"

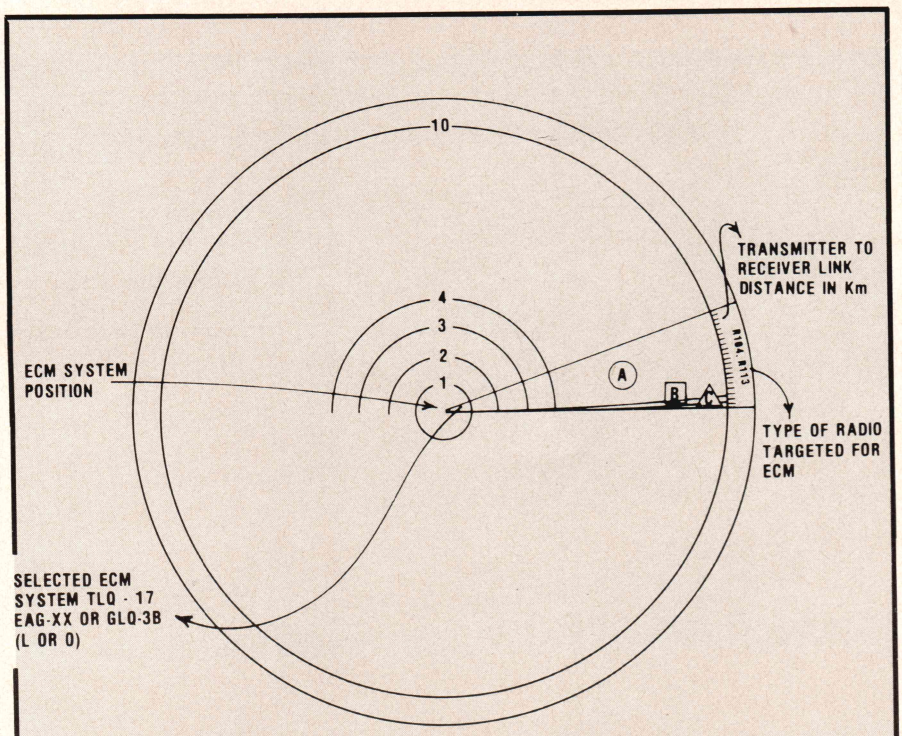
The preceding scenario based on after action reports filed at the Joint Electronic Warfare Center is common. The conclusion that JEWC analysts have come to is that groundbased jammers are being deployed too far from their targeted receivers; they aren't within effective range. There are many reasons for this phenomenon. Basically, EW planners are currently unable to determine correct jamming geometry required to overpower the targeted receiver. Jammers are not seizing the electronic high ground because they are not positioned on key electronic terrain.

The essential data elements that must be known for proper EW employment are: modulation, frequency, power in watts of the jammers and transmitters, the db gain of the antennas, the link distance between the targeted receiver and transmitter, and the distance between the jammer and the receiver. It is the latter two items which are the hardest to obtain on the battlefield.

One solution to portraying all these elements lies in EW templating. The principle behind templating is widely known and accepted in the Army. Templating is a method to provide an estimate of reality when some of the facts are unknown. Likewise, EW templating provides a method to determine the optimum location to deploy EW assets when less than eveything about the environment is known.

The EW template is a map aid designed to help the EWO estimate the effectiveness of ground-based jamming on a 1:50,000 operations map. The EW template is a transparent, plastic wheel which displays the range and effectiveness of Army ground-based EW equipment versus U.S. and Warsaw Pact radios. EW templates resemble the simple-to-use GTA 71-1-1 "Weapons Range Reader for Armor and Anti-armor." This is no accident since both armor and EW operations often involve line-of-sight.

The template itself, named the Joint Jamming Effectiveness Template, with one of the wedges highlighted, looks like this:



- Center ring identifies the three ECM systems. Note: GLQ-3B is shown with log periodic (L) and omnidirectional (O) antennas. The GLQ's log periodic antenna was designed to primarily prevent jamming friendly forces to the rear and flanks with directional propagation, vice giving substantial extra range. The EAG-XX is the current designation for the improved PIRANHA jammer.
- Outer ring identifies type of radio targeted.
- Outer ring is also used to represent the enemy's receiver to transmitter link distance in increments of 1 kilometer from 1 kilometer to 20 kilometers.
- Each ring represents 1 kilometer of distance. Scale is from 1 to 10 kilometers.

Each wedge on the J-Jet has three sections—A, B and C.

a. **Alpha.** When a targeted receiver lies within the **Alpha** portion of the J-JET, the selected ECM system has a very good chance of successfully jamming that receiver. The enemy's communications are significantly degraded.

b. **Bravo.** When a targeted receiver lies within the **Bravo** portion of the J-JET, the selected ECM system has partially degraded the transmissions received at the receiver. Only portions of each transmission are heard. The enemy's communications net is marginally effective.

c. **Charlie.** When a targeted receiver lies within the **Charlie** portion of the J-JET, the selected ECM system has little or no effect on the targeted receiver.

Capt. Thomas P. Johnson is a graduate of MIOBC, SIGINT/EW officers basic, MIOAC and the Army's ADP officers course. CPT Johnson has served as Service Platoon Leader, SIGINT/EW Platoon Leader and Operations Officer of the 851st ASA Company, 3rd Infantry Division, as well as an instructor for the 37A course, USAICS, Fort Devens. He was the project officer of the J-JET at the Joint Electronic Warfare Center. He is currently stationed in Korea.

The J-JET was generated by loading data on the ECM systems and the targeted radios into a JEWC computer model. The key elements loaded were power in watts of the system and the db gain of the antennas. Both ECM systems and radios were modeled at maximum power outage. Warsaw Pact and U.S. radios were modeled with whip antennas.

- If the Warsaw Pact adopts directional antennas for their radios, the J-JET will have to be modified.
- Line-of-sight between the ECM system and the targeted receiver must be obtained for the J-JET results to be valid.

To operate the J-JET, equip yourself with pins, sharp pencils and a 1:50,000 map, then:

- ☐ Find your ECM system on the J-JET.
- ☐ Find the targeted receiver on the J-JET.
- ☐ Locate and mark the jammer's position on the map.
- ☐ Locate and mark the targeted receiver on the map.
- ☐ Determine the enemy's transmitter to receiver link distance. Use all-source intelligence, direction finding or doctrinal template to determine this link distance.
- ☐ Note the link distance on the perimeter of the J-JET. Link distance is from 1 to 20 kilometers.
- ☐ Draw a line from the ECM system to the targeted receiver. Extend the line so that it can reach the outer perimeter of the J-JET.
- ☐ Place J-JET's center hold on ECM system's position on the map and pin in place. Rotate wheel to selected ECM system and targeted receiver so that the drawn line intersects the link distance on the exterior of the wheel. The section (A, B or C) that is over the targeted receiver shows the probability of jamming effectiveness.

Returning to the example at the start of this article, a replay of the scenario will illustrate how the J-JET can influence the commander's concept of operation.

To recap: The 2nd Brigade is to counterattack. All source intelligence has indicated that the brigade is opposed by a battalion (+) with a 155 mm battery in direct support. The G3 has tasked the electronic warfare officer to draw up an OPLAN which will strip this lead battalion of its artillery

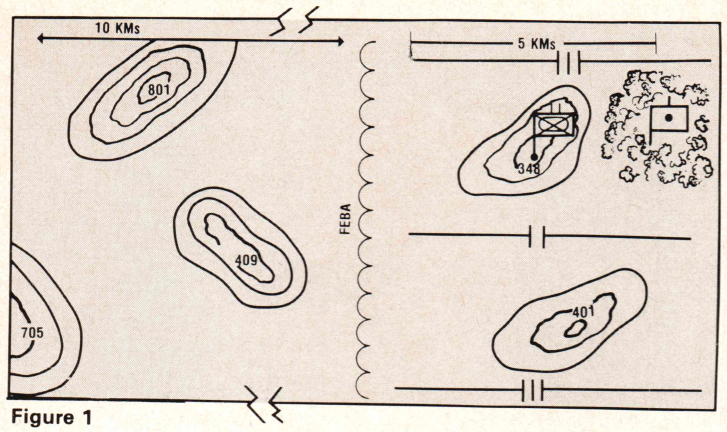
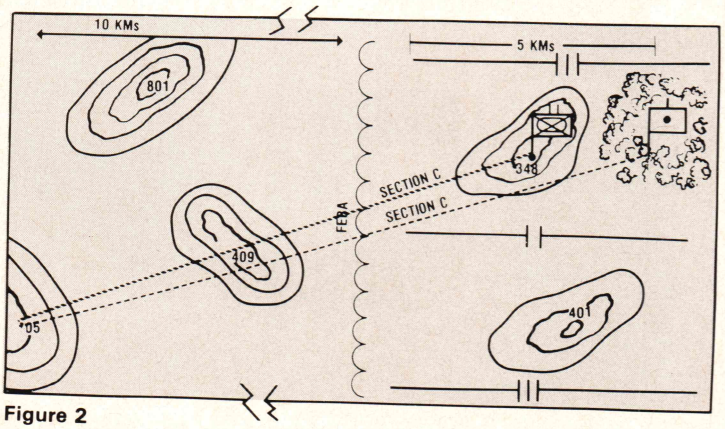


Figure 1



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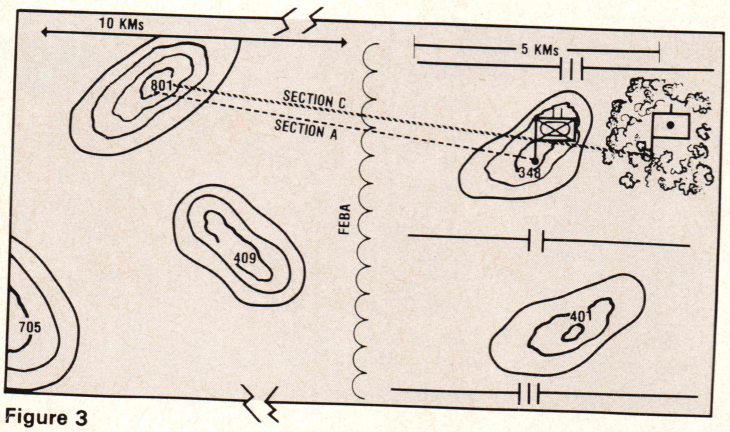


Figure 3

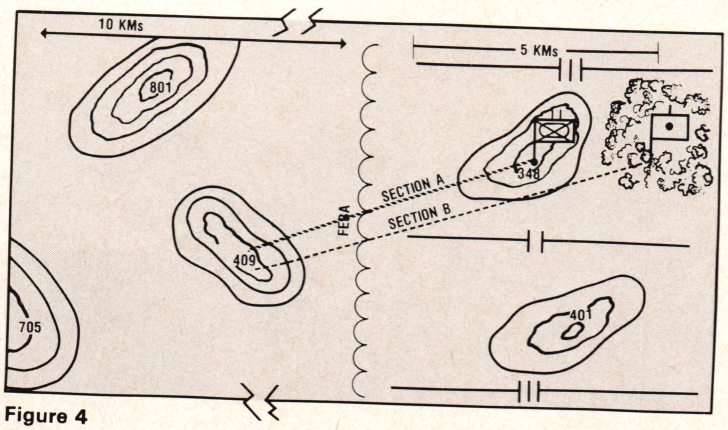


Figure 4

once the counterattack starts. The EWO notes that he has a TLQ-17 located on Hill 705. The G2 has provided the enemy's probable OPLAN (Figure 1). The battalion headquarters is on Hill 348. The enemy forward observer is co-located with the battalion headquarters for adjusting fire. The firing is in the woods to the rear of Hill 348. The enemy is equipped with the VRC family of radios.

The EWO performs a quick map inspection and determines that the TLQ-17 has line-of-sight to Hill 348 and the woods where the firing battery is positioned. He uses his J-JET to check his ability to jam the FO to firing battery link, a distance of 4 kilometers. He discovers that he is ineffective jamming either the FO or the firing battery's VRC receivers (Figure 2).

Instinctively, he positions the J-JET atop Hill 801, the dominant terrain feature in the sector. He determines that he can jam the receivers at the FO but not the receivers at the firing battery (Figure 3).

Next, he moves the J-JET atop Hill 409. He determines that he can jam the FO receivers and degrade the firing battery receivers (Figure 4).

Solution

Based on the J-JET, the EWO recommends that the TLQ-17 relocate to Hill 409 in order to improve the jammer location. He is now able to disrupt calls for fire from the FO to the battery and prevent acknowledging communications from the battery to the FO. The enemy's lead battalion will experience difficulty in obtaining direct artillery support once the counterattack and jamming commence.

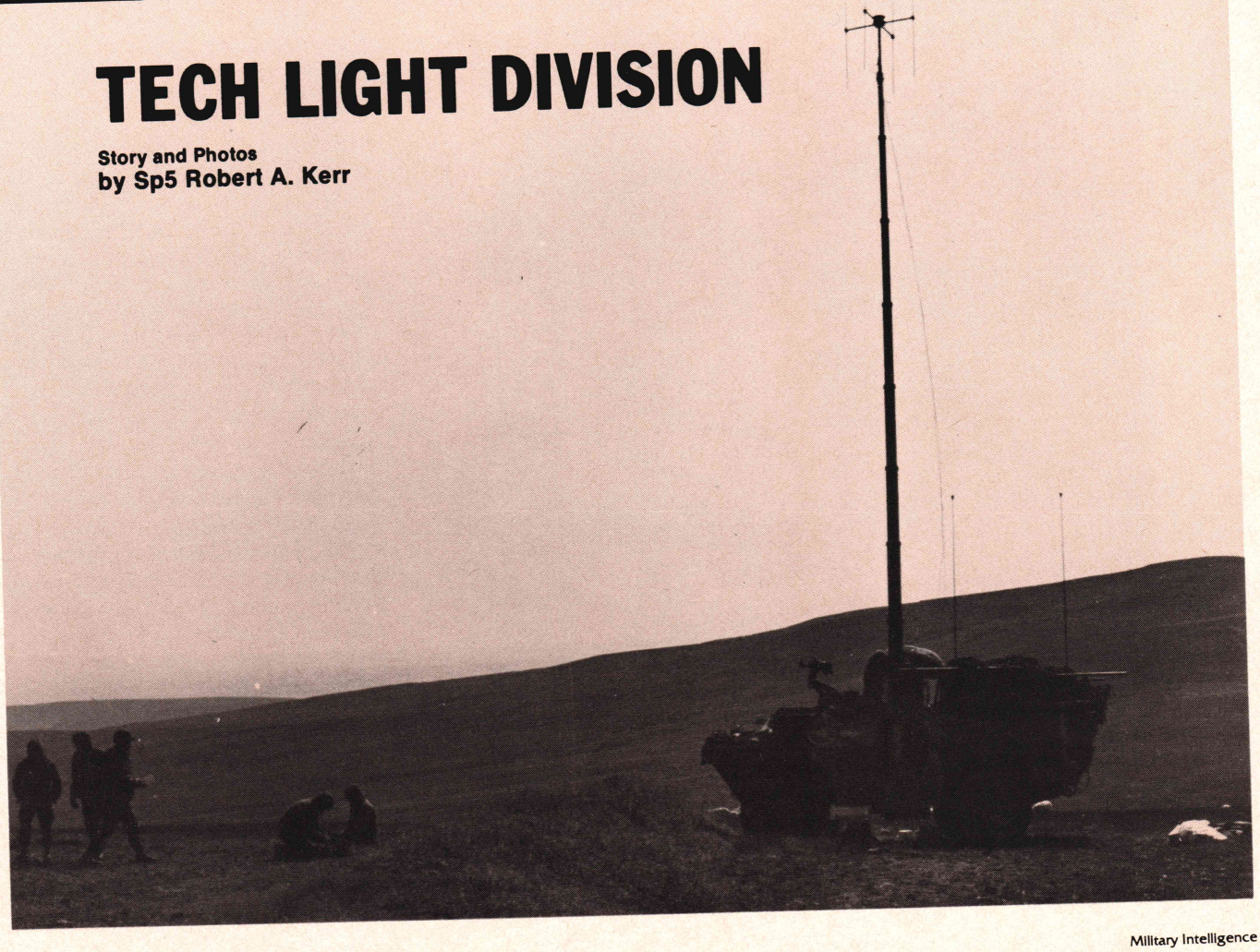
The J-JET is not a panacea for all EW planning problems, nor does it provide a model of all factors which can affect EW, such as sunspots or large mineral deposits. However, use of the J-JET will assist EW planners in positioning scarce EW assets where they can best support the commander's concept of the operation when precise intelligence is unavailable.

The J-JET will be modified as additional ECM systems; e.g., TLQ-17A, MLQ-34, are placed in the inventory. The J-JET is currently being evaluated by tactical units. Those units interested in participating in the evaluation can obtain copies of the J-JET with an instructional packet from the JEWC, ATTN: TA, Kelly Air Force Base, Texas 78243. ★

HIGH

TECH LIGHT DIVISION

Story and Photos
by Sp5 Robert A. Kerr



The High Technology Light Division concept was born in 1980, initiated by Gen. Edward C. Meyer, Army Chief of Staff. The 9th Infantry Division at Fort Lewis, Wash., was selected as the test unit for the concept. The idea is to create a force which will have the tactical mobility, firepower and survivability of a heavy division, with the strategic deployabililty and sustainability of a much lighter force. The HTLD is designed to be highly mobile and to take advantage of adverse terrain and weather conditions. Using high mobility and superior command, control, communications and intelligence, tactics are geared at keeping the enemy off balance. Combat power can be repositioned quickly to strike deep on the extended battlefield when and where it will be least expected.

To develop the concept, the 9th Infantry Division and the Army Development Employment Agency conducted map exercises and seminars. A structure was designed for the HTLD and tactics were developed supporting the requirements of AirLand Battle doctrine. Field Training Exercises, including the most recent one, Laser Mace, are test grounds for the concepts.

Yakima Firing Center, Wash., was the site of FTX Laser Mace. More than 20,000 9th Infantry Division, Reserve Component, and National Guard troops participated in the May exercise. The 9th Infantry Division's 1st Brigade served as Red Force and used the conventional equipment and structure found in most infantry brigades. The 3rd Brigade, focus of most of the high tech changes being made, served as the Blue Force.

Much of the equipment required for the HTLD is not in the Army inventory. This requires the HTLD to use surrogate equipment—equipment similar to the required pieces and usually procured from the civilian sector or fabricated from existing stocks. Modified "dune buggies" serve as Fast Attack Vehicles and sport TOW anti-tank missile launchers or MK19 grenade launchers. In lieu of receiving the new High Mobility Multi-Purpose Wheeled Vehicles (HMMWV), modified M880 pick-ups are used as squad and weapon carriers.

On this large, fast-moving battlefield, the Military Intelligence battalion faces a challenge. The 9th Infantry Division's primary intelligence asset is the 109th Military Intelligence Battalion (Combat Electronic Warfare Intelligence).

"One of the major things we are testing out here is the five-company CEWI battalion," said Lt. Col. G.L. Sokness, 109th MI Battalion (CEWI) commander. "This includes a general support company and three forward support companies, one at each brigade. This is really an evaluation of the forward support company by the Intelligence and Security Board. Some of the equipment issues are incidental to that test. At the outcome we should have a better feel for the concept and the organization, its strengths and weaknesses."

1st Lt. David Wilsey is the executive officer for Company B, 109th MI Bn (CEWI). During the exercise, Company B provided direct support to the 3rd Brigade.

Military Intelligence adjusts to the fast-moving battlefield

Wilsey explained the organization of the company. "The company is basically divided into three platoons; the headquarters and operations platoon, an intelligence and surveillance platoon, and an electronic warfare platoon. The headquarters and operations platoon includes the operations section which manages our assets. It also includes a maintenance and supply section which provides motor maintenance and electronic maintenance. 31Vs, 31Es and 31Ss are all part of this section. We also have mechanics, a wrecker and a maintenance contact truck. We stock our own PLL, and we can do most of the maintenance, except for third echelon, right here at the company location.

"The intelligence and surveillance platoon is divided into seven teams," he continued. "This includes three mini-range surveillance teams and a long-range surveillance team which uses a long-range electro-optical device mounted on a Dragoon 300 armored wheeled vehicle. We also have a counter intelligence team which includes an interrogation prisoner of war team. The remotely based sensor (REMBASS) team is also included in the I and S platoon.

"The electronic warfare platoon is composed of three EW intercept and jamming teams. Two of these teams are mounted in Dragoon 300s for this exercise; the other is a surrogate team that's mounted in a quarter-ton jeep with trailer. They have a capability to do jamming with a TLQ 17A and perform intercept and direction finding with a Watkins-Johnson MRDF system."

"What we have been trying to do for the last six months is to digitize our input from the lowest sensor levels," explained Maj. Norman L. Williamson, 109th MI Battalion (CEWI) S3. "Information must be rapidly placed across the battlefield so it can be distributed at the MI battalion and at the forward support company level. One way to do that is through a digitized input/output device that we have interfaced with an Apple computer system. This is the second time that it has been used in a major exercise.

"We send out tasks and priority messages and in return we receive collection reports and jamming results from the companies and from the sensors themselves," he continued. "When it comes in we get a hard copy printout, and it goes into a central controller computer which reviews it for accuracy. Once it has been reviewed and accepted, it goes into a Corvus 20 mega-byte hard disk which we have connected with an Omni net distribute data processor."

Programs have been modified to accommodate the battalion's tactical SOP. Once in the hard disk memory of the master data base, information can be withdrawn at any of the linked data bases throughout the battalion operations center. CWO 2 Gary L. Davis, systems manager, explained that each analysis station has an Apple data base. Stations are located with the electronic intelligence, direction finding, traffic analysis, intelligence (order of battle), and electronic warfare analysts, as well as at the map board and the S3 summary board. SFC Eric Thornton, battalion operations sergeant, praised the system and said that it improves communication between the analysts and speeds up production by sorting, categorizing and matching information.

One piece of equipment that seems to have found a home in the MI battal-

ion is the Litton High Speed Burst Digital Transmitter. Each sensor team has one, as does company headquarters, the electronic warfare support officer at brigade, and the battalion operations center.

"The Litton is a small hand-held device through which we transmit reports," Wilsey said. "For instance, a member of one of our EW teams can press in a Blue 2 (intercept and direction finding report) into the Litton and burst transmit it to us. We receive it here on our Litton device and also get a hard copy on our printer. We have a tape of all transmissions and receptions and it doesn't involve any writing down. We also get reports over the battalion tasking and reporting net. The concept of this device is to limit air time and the possibility of DF. It also relieves the strain of copying down all incoming data off a voice transmission. With the hard copy, we get more accuracy. Our analysts have more time to analyze instead of furiously copying down data, not really getting a good look at it and using it as they should."

"The Litton itself has been purchased in limited quantities by the Marine Corps," Williamson said. "It has a standard nomenclature, but the systems we're using are test models, not final production models. Litton has company representatives here to talk directly to the users. Programs are modified based on this user input. This gives bottom-up system development rather than top-down development."

The 109th is also testing the concept of using armored wheeled vehicles as electronic warfare platforms for its sensor teams. Sgt. John Corkhill, chief of a collection and jamming team for Company B, had much to say about using the Dragoon 300, "With the amount of equipment we carry, the Dragoon is a lot better than using a jeep and trailer. It has a hydraulic 40-foot mast with a DF antenna on it that is really easy to set up. It goes much faster and up steeper hills than a jeep. It has a hydrostatic generator which you can use to run personal appliances. We carry a tent in case we stand down for a few days, but basically we live in the vehicle. We like it; it's a good vehicle."

"We're not really looking at the Dragoon 300 vehicle itself, but rather the concept of mounting EW equipment in an armored wheeled vehicle for crew and equipment protection," said Williamson. "The Dragoon is just a surrogate based upon what the Army is leaning toward. For our purpose of testing concepts, the Dragoon has many parts in common with the five-ton truck and the M113 which helps with maintenance. It can travel as fast as 70 miles per hour which is in keeping with the fast attack of the infantry and their new types of vehicles. It also allows for rapid tear down and set up of equipment."

"Another concept we've been testing is the use of remotely piloted vehicles at the direct support level," said Wilsey. "They are using surrogate RPVs at brigade, which is a totally new concept. RPVs are normally considered a general support level asset, but they have been tasked down to direct support level for this exercise. When they are tasked down to us, we receive reports directly over our company T&R net."

"Again, this is a test of concepts rather than actual pieces of hardware," Sokness added. "In cooperation with the Night Vision Laboratories and some private industry, we are looking at sensors and down-links and are developing an operational understanding and capability. We see an absolute need in the division for RPVs to see the deep battle. This is our initiation to using RPVs as an intelligence system. They are flying at night with flares and providing information to our forward support elements and the brigade. It is giving our analysts a chance to deal with that kind of imagery, how to interpret it, and what sort of intelligence it can provide to the brigade S2.

"There's a lot more to this than dune buggies and exotic pieces of equipment."

"In the D-series TO&E that we are organized under, we have an RPV section. Those soldiers assigned to the RPV section are now supporting the RPVs at Yakima during this exercise." He added, "There will be more RPV development in the months ahead, I am certain of that.

"There's a lot more to this than dune buggies and exotic pieces of equipment," Sokness said. "There are some very fundamental things that have and are being addressed out here to round out the whole concept. That includes communications; there is a tremendous need there that impacts on the MI battalion. We have serious shortcomings in sustaining the force logistically. We need a better grade of power generators; smaller, lighter, quieter and more reliable. We need state of the art test measurement equipment; that will save a great deal in deployability and operational readiness on the battlefield.

"The whole logistical concept of how the troops are fed, equipment is maintained, equipment is recovered, et cetera, is part of the effort out here," Sokness continued. "There are tremendous communications and log-

PFCs Sam Norosec (left) and Tim Dube of Company A, 4th Battalion, 23rd Infantry, await the attack of the High Technology Light Division.

istical lines in this exercise. It's not a simple matter of driving over the next hill to get what you need. You may spend two or three hours on the road just getting to your rear support area."

"So, in our organization, we have a transportation squad in the service support platoon whose main responsibility is to get supplies from our supply line forward to our MI battalion TRAINS," Williamson added. "We have just begun to scratch the surface on how we're going to do that. The whole division will be back out here in September to work on logistics."

"We are covering great distances out here and it really taxes the communications," Wilsey said. "If you're not getting peak power or if anything is not working properly, your nets are going to be down. Being attached to the High Technology Light Brigade, we do a lot of jumping. That severely inhibits our ability for collection. While we're on the move it's virtually impossible to receive and send out Blue 2 reports with the load we carry and the types of vehicles we have right now. And, because of the great distances, you just can't communicate on a whip antenna. Once we are stationary and get set up, things run really well, but on the fluid battlefield, where you could move two or three times a day, it really taxes the system."

"Time is probably the key to the whole operation," Sokness said. "Actions move more rapidly than they did ten years ago and intelligence has to react faster. We have to move the information faster and get the right information to the right people. It leaves an awful amount of room for significant improvement."

One concept being stressed in the 9th Infantry Division is user development.

"Simply stated, the guy who has to do it is the one who best knows what he needs, with the help of the technical experts," Sokness said. "This applies whether you're developing a computer system or a weapons system, a vehicle or a piece of clothing. The soldier who has to make it happen in the division now has a great say in what that product or system is going to be and it's going to meet his needs. No more, no less."

"Much of the equipment we have is already state of the art," Williamson added, "but that does not mean that improvements cannot still be made. It's not just intelligence equipment and concepts that we're developing and looking at; the entire structure is involved. Our maintenance people are just as involved in enhancing our operation as are our collectors and jammers and surveillance personnel.

"For example, our maintenance people are saying that if we had some M880-type vehicles with ambulance shelters and replaced some of the old test equipment with the new stuff we've seen, we could reduce the number of aircraft needed to deploy just our electronic maintenance section, which currently uses 5-tons with 280 shelters," he continued. "The entire battalion is involved in thinking of ways to do their job better and become more strategically deployable and survivable on the battlefield.

"It's not just us, either. We have a constant exchange of ideas with other FORSCOM units, the Intelligence School and the Department of the Army, because we're all in this together."

The battlefield of tomorrow will be large and things will happen fast. The High Technology Light Division, through exercises like Laser Mace, will continue to test concepts and train soldiers to fight and survive on this battlefield. Timely and accurate intelligence will become increasingly important to the commander in the field and the 109th MI Battalion (CEWI) is working toward meeting the challenge. ★

Members of CSC, 4th Battalion, 23rd Infantry, patrol the "Red Force" area. Their jeeps were no match for the faster, high tech vehicles.

Sp5 Robert A. Kerr is currently assigned as staff journalist and departments editor for **Military Intelligence Magazine.** *Kerr's previous assignments include duty with the 32nd Army Air Defense Command at Darmstadt, West Germany, the 2nd Armored Division (Forward) at Garlstedt, West Germany, and the United States Military Academy at West Point, N.Y.*

Tactical Electronic Intelligence Operator Training

by Billy B. Wise

The Tactical Electronic Intelligence Operator Trainer is being developed by the Georgia Institute of Technology, under the U.S. Army Forces Command quick reaction capability program called MICROFIX. The TET is intended to provide unit level refresher and proficiency training for tactical ELINT operators (MOS 98J) in emitter signature recognition.

In keeping with Georgia Tech's approach of serving the user, development of a design for the TET was begun by consulting with the ultimate users, military intelligence battalions in the field. A visit was made to Fort Hood, Tex., to observe battalion operations first hand and to discuss unit training requirements directly with the users. Following this field visit, a working meeting was held at Georgia Tech, bringing together representatives from the users, III Corps, USAISD, FORSCOM. The purpose of this session was to develop an acceptable set of general design goals for an ELINT operator training device to support the unit training mission.

After many man-hours of hard discussion, it was concluded that any unit training device must be:

- Inexpensive
- Flexible
- Realistic
- Easy to Use
- Accessible
- Capable of evaluating results

A unit training device must be relatively inexpensive. To meet the training needs of widely dispersed Army units, fairly large numbers of training devices are required. Even with currently proposed record-level military budgets, funds for training will most probably always take an inferior role with respect to weaponry. Thus, a very costly training capability will likely not be procured in sufficient quantity to meet the needs of dispersed units.

A device for unit training must be flexible, to allow for adaptation to unique local training requirements and to increase its usage rate. If a given device can suffice for several different training tasks, it will certainly get greater use with resultant lower average training cost. A unit training device must present a realistic situation to the user. Unit training is by its nature very close to the real-world, thus unrealistic artificial training devices will hold little appeal and offer low effectiveness to the users. A unit training device must be easy to use by the trainees.

Manpower and time are scarce resources in today's Army. A training device which requires extensive instruction before it can be used by a trainee, or a device which requires the presence of an experienced NCO instructor, would be more of a liability than an asset to unit training.

To be effective and do its job, a training device must be accessible to the users. Millions of dollars have been expended on training devices which will end up drawing dust on a shelf, because access to them is available only during normal duty hours when time for training is most scarce. An easily operable device which can be made available at all hours will receive far more use.

Finally, a training device must incorporate some method of evaluating training progress. Progress evaluation allows a unit to gauge its degree of readiness to fight and when properly used can serve as a motivating factor to encourage user participation.

In addition to general trainer goals, the meeting also resulted in development of a curricular scheme for training tactical ELINT operators in signature recognition and classification. It was decided to approach this task in three phases, with each phase being more realistic and more difficult to implement.

The first step is to group the emitters into families, and make each defined family into a training package. A family is defined as a group of emitters with related functions. Having produced training packages for each emitter family, the next phase is to develop training packages for locales. A locale is a designated portion of the electromagnetic spectrum.

Additional study will be required before specific locales in the spectrum are quantitatively defined. The third phase is to develop training packages for specified scenarios. A scenario is defined as a specific battle situation, such as a river crossing, airfield defense, etc. This phase will require extensive work to develop reasonable scenarios and assemble the required emitter signature patterns.

TET is not a dedicated single-use training device in the conventional sense, but is a series of software programs intended for running on the TEMPEST-qualified Apple II microcomputers also developed under the MICROFIX program. By using existing equipment, acquisition cost for the training capability is held down,

and the unit is not burdened with a lot of additional hardware. As described above, the initial series of TET training programs is organized according to families of emitters, such as anti-aircraft artillery radars, tactical surface-to-air missile radars, battlefield surveillance radars, etc.

TET accomplishes its training task by presenting information on emitter physical description, employment and parameter limits for each member of the family.

The information on each emitter is stored on a videodisc in the form of video images, as well as a narrative and emitter sounds on audio tracks. Information from the videodisc is presented on the Apple II computer color monitor as directed by a software program running on the Apple. The trainee interacts with the color monitor display and controls the flow of a training session by pressing keys on the Apple keyboard as directed by visual cues on the display and audio cues from the videodisc sound track. A headset is provided for receiving audio outputs from the videodisc.

Since all of the information is delivered from a videodisc via a computer display, there is no need for a technically skilled ELINT training instructor at the unit level. The computer software programs are designed to be self-loading and each one displays easily understandable operating cues to the user. No knowledge of computer programming is required by the user. After a few minutes of instruction on how to load the videodisc and insert the computer floppy diskettes, a soldier should be able to use the TET without assistance, at any time of day or night. It is emphasized that TET has been designed to meet the needs of refresher and proficiency training at the unit level. TET will not replace the need for concentrated classroom instruction provided by U.S. Army Intelligence School, Fort Devens, Mass.

TET has four different operating modes, three intended for training and one for training support. The three training modes are a tutorial session, a practice session and a testing session.

The tutorial session is intended to provide direct instruction on each emitter, imparting information on emitter employment, and physical and electronic characteristics. The visual display of text, equipment photos, and emitter signatures on the ULA-2 pulse analyzer, is accompanied by a voice narrative and emitter sounds from the pulse analyzer. The trainee is given a choice of proceeding through the entire emitter family, such as in initial training sessions, or reviewing selected emitters from a menu. Pacing of the tutorial presentation is controlled by the user.

The practice session is intended to provide experience in emitter signature recognition and classification, and in recalling operational and technical information about the emitter as presented in the tutorial session. The trainee selects from a menu of emitter names the ones on which recognition practice is desired. The trainee is shown an emitter signal on the ULA-2 pulse analyzer, and is then asked questions about the signal parameters. Having correctly identified the emitter, the trainee is posed additional questions about that emitter's employment and other characteristics. Acknowledgement is given for correct answers, and the correct answer is displayed after a user has twice responded to a question with wrong answers.

The testing session proceeds in a manner very similar to the practice session, except that emitters are presented in a randomized order and no answers are given by the computer. The user may review responses given to questions and make corrections where desired. The user's responses are recorded by the computer, and the user may request a printout of the test result.

There is a fourth mode of operation called the command level, which is intended for use only by the training NCO. The command level mode allows the training NCO to request printouts of all trainee's responses in testing sessions, and also allows the entry, deletion, or modification of questions for the practice and testing sessions. Each TET package will be delivered with a basic set of questions installed and the training NCO at each user site may modify the question bank as desired.

This testing feature allows for feedback on the benefit of the training provided. Individual trainee's progress may be monitored by the unit training NCO and results reported as desired.

The first TET training program to be released will be for the anti-aircraft artillery family. During the last week of February 1983, a panel of intelligence analysts reviewed the Tactical ELINT Trainer AAA Family training package. The panel was made up of representatives from the 522d Military Intelligence Battalion, Fort Hood, Texas; CPAR, Fort Meade, Md., and FORSCOM, Fort McPherson, Ga.; and included both experienced and novice ELINT operators (MOS 98J). The purpose of this review session was to afford actual users and subject-matter experts the opportunity to evaluate the ease-of-use of the ELINT training capability, and the correctness and sufficiency of its technical content.

The inexperienced operator members of the panel were given a briefing on how to load the videodisc and computer data diskettes, and then were left on their own to operate the training program, under observation by the experienced operators and system development personnel. Several suggestions for operating improvements to the trainer were generated, but the overall impression of those participating in the review was positive. The trainer was easy to operate without expert assistance, and it provided meaningful training without the need for an experienced instructor.

Coincident with the initial user evaluation of TET I (AAA family), a planning session was held on TET II. This second TET program will cover the family of emitters associated with tactical surface-to-air missiles. Lessons learned in the development and initial evaluation of TET I will be applied to further improve performance of this new program. TET II will use nearly the same format as TET I, some modification being required to accommodate the multiple emitters associated with each missile system.

The advent of a TET-like training capability at the unit level will provide operational forces with a valuable, flexible training tool to improve readiness. With the TET, meaningful, realistic training can be accomplished at the unit level without the requirement for a skilled NCO instructor. Because of the low per-unit cost, and the ability of the computer and videodisc hardware to run other training programs, the TET-like capability should be readily available to the operating forces. ★

Research and Development Moves into the 21st CENTURY

by Sharon Murphy Odle

AirLand Battle 2000 describes how the Army will fight during the 1995-2015 time frame, should that be necessary. It's a new, long-range and evolutionary concept that looks out more than 20 years into the future.

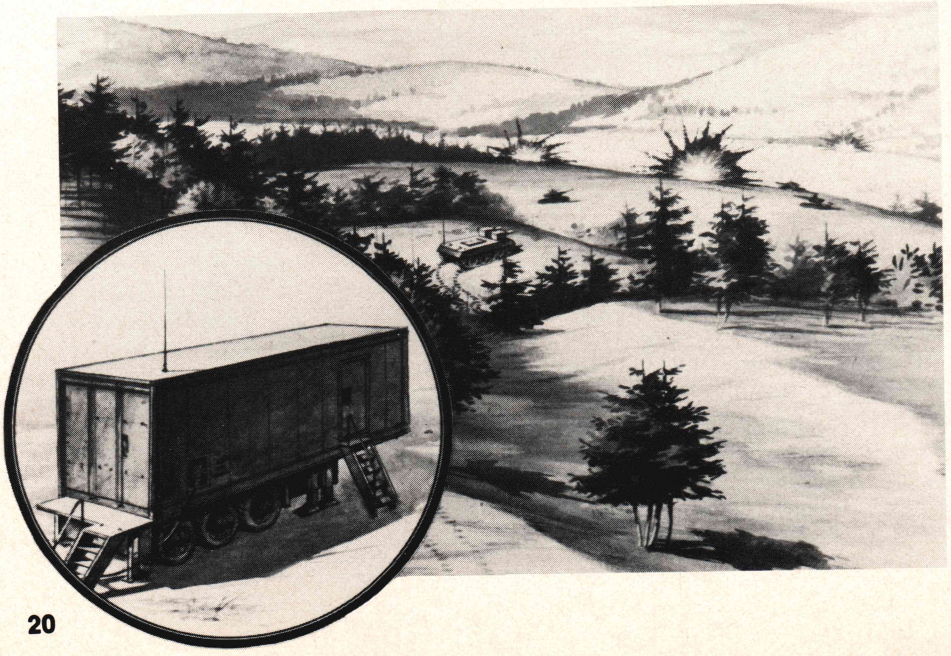
The concept emphasizes lean, lightweight and highly mobile units. High technology will be used as a combat multiplier. Victory will be sought through maneuver, advantageous positioning of forces and, with minimum exposure of friendly forces to destructive weapons effects, the use of deception.

Right now, researchers at the U.S. Army Engineer Topographic Laboratories' Center for Artificial Intelligence are investigating the applications of artificial intelligence/robotics systems to Army needs.

Artificial Intelligence includes the study of how to make computers perform tasks that, until recently, only humans could perform. Hence, AI is "smart" computer software. One point of emphasis in AI research is to design computer programs, "expert programs," that capture the knowledge and reasoning processes of highly intelligent specialists.

Robots, on the other hand, do what their programs tell them to do. By linking expert programs with obedient robots, it will be possible to transform rote slaves into intelligent assistants.

A human operator in the van will use terrain data bases and a stereo view from Robotic Reconnaissance Vehicle to control routes.



An intelligent robot, in order to perform human tasks, should be able to think, sense, and effect (move and manipulate). The thinking or "brain function" executed by a computer is the domain of artificial intelligence. Sensing and effecting are "body functions;" they are based on physics, mechanical engineering, electrical engineering and computer science. Planning and execution of tasks entail both brain and body, and so are affected by both artificial intelligence and robotics.[1]

The main focus of AI research, presently, is in isolating generically practical applications where the technology would assist or aid the "man-in-the-loop."[2] The essential flavor of the Army AI/Robotics program is captured if one thinks of unmanned reconnaissance vehicles, mobile weapons platforms or resupply vehicles as robotic machines.

Research is aimed at producing driverless vehicles, weapons platforms such as tanks, or resupply vehicles such as jeeps or trucks. AI systems might eventually handle explosive land mines, advise soldiers troubleshooting complex weapons systems, and pilot vehicles through highly hazardous areas.

Requested by the Army deputy chief of staff for research, development and acquisition, ETL prepared a plan for a robotic reconnaissance vehicle demonstrator with terrain analysis.

The terrain data base materials that will be used in the demonstration are similar to those produced by the Defense Mapping Agency for testing by

the 9th Infantry Division at Fort Lewis, Wash. Data bases for the demonstration will be produced at ETL with laboratory equipment under study for Field Army applications.

Top priority for the demonstration has been given by the Army Science Board ad hoc subgroup for robotics and artificial intelligence, and by the U.S. Army Training and Doctrine Command schools and centers.

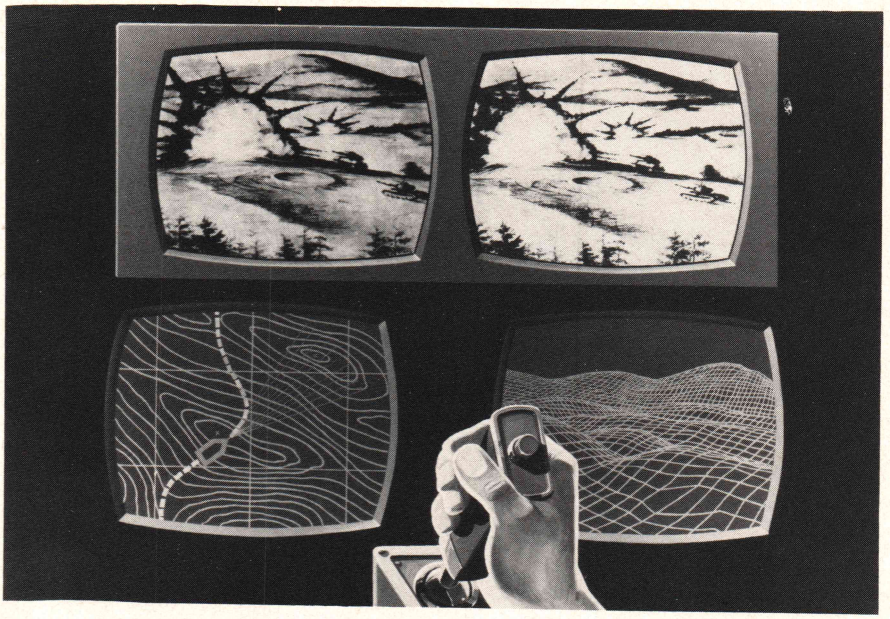
For the past 20 years, Defense Advanced Research Projects Agency has been a leader in AI research; contracts were let to "think tanks" and university groups to gather a better understanding of the field. DARPA and Office of Naval Research funding in the early 1960s laid the groundwork for the present foundation in AI/Robotics.[3]

Extensive commerical development of AI is already underway. By using AI, computers are performing geological analysis, giving medical opinions and telling us what's wrong with our cars. Robots are welding, painting and working on automotive assembly lines. These industrial robots operate within an environment that is highly structured and controlled—everything is in its proper place.[4]

The modern battlefield is not structured. Current doctrine emphasizes fluidity and thus a different kind of robot—a "smart" robot—is needed to survive and perform its programmed mission.

Initial goals of the ETL program are aimed at producing a reconnaissance vehicle that will be remotely controlled by a human operator located in a control van away from the actual combat zone. The robot vehicle will contain sensors to locate enemy targets, a position/navigation device to track its own position, and communication electronics. The human operator in the van will use an expert system of stored data bases which presents the operator with different actions, options, warnings, etc., and a stereo view from the vehicle to control routes.

According to an ETL report: "The basic technique behind expert systems is to encode an expert's knowledge as rules stating the likelihood of a hypothesis based on available evidence. The expert system uses these rules and the available evidence to form hypotheses. If evidence is lacking, the expert will ask for it.



The present approach to Artificial Intelligence (AI) applications is to keep the human in the loop and to provide AI modules which will improve total system performance. Evolution of this system will reduce the need for human interaction and will result in automated systems of the future.

"An example might be:

IF THE JEEP WILL NOT START
and
THE HORN WILL NOT WORK
and
THE LIGHTS ARE VERY DIM
then
THE BATTERY IS DEAD
with 90 PERCENT PROBABILITY

If an expert system has this rule and is told:

THE JEEP WON'T START,

the system will ask about the horn and the lights and decide the likelihood that the battery is dead."[5] Eventually expert systems will incorporate enough AI to act autonomously.

Researchers are cautious about proceeding too quickly. Military applications of AI are under careful, conservative study, case-by-case. More autonomous systems will call for the design of military management systems that reinforce, rather than undermine, the status and function of middle-level users.[6]

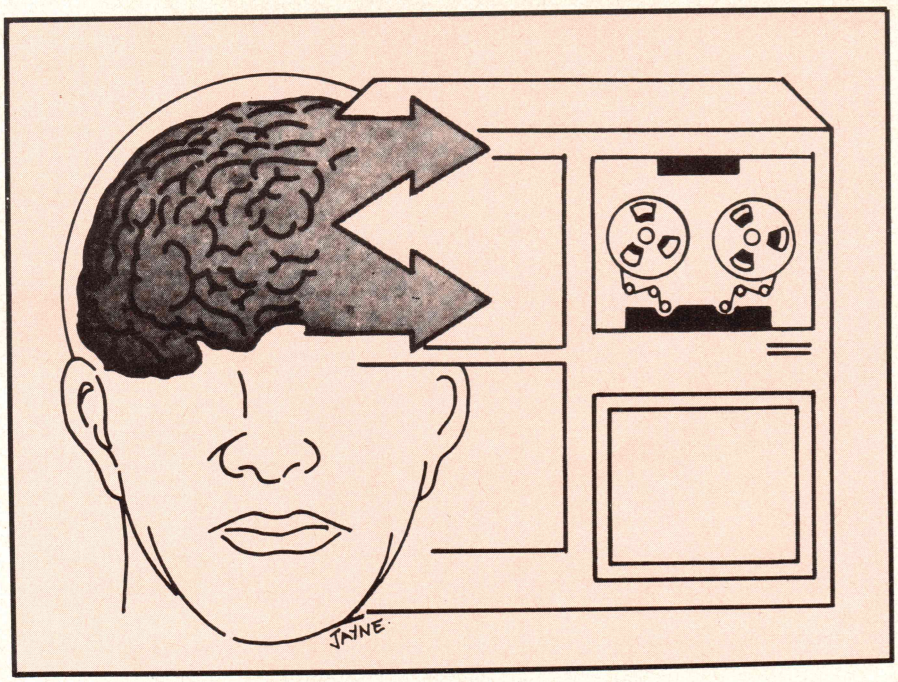
While it is speculative to predict where AI might be used for military applications, it does show promise for information-handling tasks where massive data, speed, predictability, vigilance, skill shortages and ambient risk are important considerations.[7]

Currently, the Army must maintain combat-ready forces under severe limitations on available manpower. In war-time it is generally anticipated that the Soviet Union can deploy numerically superior forces. Thus, it's important to augment the available manpower, as much as possible, to perform combat and combat support tasks.[8]

AI theory and technology is already being applied to the labor intensive areas of photo interpretation and terrain analysis. The first successful interface between a photo interpreter, who analyzes high resolution aerial photography, and a digital computer, which supports a geographic information system, is already taking place in ETL's computer assisted photo interpretation research facility. This system provides the primary tool for a broad-based program of feature extraction research.

Also being studied is how the terrain analyst thinks and how knowledge is manipulated to solve problems. Principles of how knowledge builds up, and how it is called forth in logical sequence, are then programmed. These programs will pursue a line of reasoning (logic), instead of a sequence of arithmetic steps.

This approach correlates with guidelines for good intelligence summaries. Spelled out in an article in ***Military Intelligence*** magazine, "these guidelines were developed through application of 'schema' theory, from cog-



Artificial Intelligence (AI) offers a potential solution to automated image analysis because AI software uses rules of human judjment for solving problems.

nitive psychology, to the intelligence task. The theory holds that the comprehension of any information is affected by past knowledge, which is organized as a mental outline of an individual's general information on a topic. This 'schema' or underlying logical structure provides the outline for organizing and interpreting new material. Since a set of schemata would exist for military data in the minds of highly skilled officers, our officers are a resource for developing standardized aids for managing information."[9]

The research goal to make computers smarter need not conflict with goals to better understand human intelligence and knowledge. In fact, both are essential for the AI/Robotics researcher.

ETL has a large pool of U.S. leaders in Army mapping and terrain analysis. AI expert judgmental rules can be acquired from these leaders for problem solving related to mapping and terrain analysis.

By 1990s, ETL researchers hope to capture, in a computer program, how the analyst recognizes patterns and extracts specific terrain features. When this occurs, the result would be greater overall efficiency and improved accuracy of intelligence products to support the extended battlefield.

Maj. Gen. William E. Odom points out, "Tactical commanders facing the Soviet threat in Europe, Southwest Asia or the Far East will have a hard time defeating it unless they can see and attack much of it while it remains far to the rear in deep echelonment. The task of tactical intelligence, therefore, is to identify, locate and determine the time of arrival of echeloned opposing forces. In order to carry out his mission, the commander will require intelligence from all sources—signal, imagery, and human. Greatly increasing collection capabilities will achieve little unless our analytical and intelligence production capacities can exploit the flow of raw information."[10]

For the intelligence analyst, "thinking" computers will sort the glut of incoming information, evaluate the data, suggest probable actions by enemy forces, and list weighted response options. Processors could also be "taught" to read photo-reconnaissance for detecting change in military force structures and material emplacements.[11]

It appears that no single weapon system can be fielded to cope with the total AirLand Battle 2000 requirements. The battle, if there is one, will be waged with integrated systems of all arms and services. Using the right combination of firepower, maneuver, economy of force, and early identification of decision points will keep the enemy off balance. If U.S. forces can change the situation in a relatively short period of time, throughout the three dimensions of the battlefield, the enemy's ability to react will be affected.[12]

One of the roles that AI/Robotics technology could fill is to provide an interface that will enable the time and means for innovative thinking and force agility. ★

Footnotes

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6. James B. Schultz interview with Gary Martins, "What is AI?" Defense Electronics, (January 1983), p. 78.
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Implementing the CEWI Concept

by Major James M. Collins, Jr.

The missions of the Combat Electronic Warfare Intelligence company are to provide combat intelligence, electronic warfare, and Operations Security to support a separate brigade or armored cavalry regiment.

Resources to execute these missions have been provided to tactical maneuver units in recent years by both military intelligence and Army Security Agency units. The MI and ASA units have not been equipped, staffed, or trained to contribute to force readiness. As a result, the Department of the Army is implementing organizational changes in the active and reserve components to convert existing MI and ASA units to CEWI units.

Most RC combat units which are authorized CEWI support are in the Army National Guard. The 122d U.S. Army Reserve Command, headquartered at North Little Rock, Ark., has the mission to establish two CEWI companies for ARNG support. The 239th CEWI Company will be activated in Infantry Brigade in the Arkansas ARNG. Later, the 245th CEWI Company will be activated to support the 45th Infantry Brigade in the Oklahoma ARNG.

This article discusses three interrelated resource problems encountered in implementing the CEWI concept within the 122d ARCOM. The availability of equipment, personnel staffing, and training for these two CEWI companies, as well as the actions which have been taken to date, will be discussed. The data and information are extracted from plans and correspondence originated at Headquarters, DA; personal visits by the author to the affected units; interviews with key personnel; and the author's personal observations as a CEWI action officer in the ARCOM HQ.

The first problem is the availability of equipment. The shortage of equipment for training of the existing units has had a negative impact on their readiness. New mission equipment costing millions of dollars must now be procured over a period of years. As an interim measure, several sets of equipment have been purchased and installed at a consolidated training facility in Austin, Texas. This equipment will be available for regular weekend training by the units up to eleven times per year. This

enables the units to train and maintain their skills until the required equipment is available at the home station. In addition, several items of equipment will be available for transfer to the 239th from the three existing MI and ASA units in Arkansas and Louisiana.

The second problem is the personnel staffing for the CEWI units. Some skilled personnel within the existing units will be available for transfer to the 239th. Current MOS-qualified unit members want to see a clear path for retention and promotion in their career management fields. Reservists seek units where this is possible. The units to be converted were notified in fiscal year 1982 of the proposed action. Because of the uncertainty over the 239th, some soldiers have been hesitant to pursue training for their current duty positions;some have even sought new units. Recruiting of additional personnel is dependent on the availability of suitable skills in the community. As a result, three locations are planned for elements of the 239th. The headquarters will be in North Little Rock, with additional detachments in Jonesboro, Ark., and New Orleans, La., where the units to be converted are now located. Recuriting and retention of skill reservists seems dependent on perceived promotion potential, job satisfaction, and good training.

Training is the final problem. While sixteen hours of training time is available for each weekend drill, travel to and from CTF in Austin will reduce actual training time by up to 25 percent. On the other hand, personnel in the 33, 96, and 98 CMFs will be afforded "hands on" training which should help them retain perishable skills. Such training has not been available previously because of equipment shortages. Annual training (two weeks of active duty) for the 239th is anticipated at the CTF in fiscal year 1984. This schedule will allow personnel to practice their skills and demonstrate their proficiency in a field environment. Some hardships will exist for soldiers who must travel monthly to Austin. These hardships should be offset by the availability of equipment and mission training which has been missing previously in MI and ASA units. However, none of these problems will be resolved by converting the units to CEWI.

Planning for the implementation of CEWI in the 122d ARCOM is underway. To be useful, the CEWI concept must be supported with substantial new resources, for example, sophisticated equipment, qualified personnel, and effective training. The money to acquire these resources is controlled much higher in the chain of command than the ARCOM level. Good units depend on good training. Good training depends on adequate staffing and equipment. The success or failure of CEWI in the 122d ARCOM is tied directly to the chain of command commitment from HQ, DA to the unit. Once the resources are made available, the ARCOM will move quickly to convert its units. ★

Major James M. Collins, Jr., is the Electronic Warfare/Cryptographic Officer for Headquarters, 122d U.S. Army Reserve Command, North Little Rock, Ark.

The perfect deception plan is like a jigsaw puzzle. Pieces of information are allowed to reach the enemy, in such a way as to convince him that he has discovered them by accident.

Tactical DECEPTION

In Today's Army

by Capt. Elizabeth D. Estler

Studies of deception have been limited primarily to its role in warfare as a combat multiplier. Effective employment of all combat multipliers will be critical to our success in the next conflict. It is strange that, while training for combat, we generally do not include deception as a viable alternative in achieving surprise and success on the battlefield. In future AirLand battles, surprise and interdiction of second echelon forces will be the key ingredients to winning the war. Properly planned deception can give us that surprise. We must begin to plan and train to successfully use this combat multiplier to its fullest extent.

This article will emphasize the advantages that deception offers the tactical commander and delineate the requirements necessary to implement a successful deception program. It is also intended to demonstrate the need to make that program effective.

"Although almost every war has seen some type of deception, it has never gained a place in the formal doctrine of most countries to include the United States. As Lawrence of Arabia noted, '. . .deceptions for the ordinary general were just witty hors d'oeuvres before battle.'. . . Perhaps the lack of doctrinal acceptance is due to the nature of deception. Deception is more than surprise. It is art. It requires a blend of skill and imagination unimpaired by bureaucratic constraints. The battlefield of tomorrow will obviously be loaded with technology, but technology only changes the complexion of war, not the art of warfare. Despite the presence of sophisticated communications, electronics and radars, the application of deception concepts. . .can be instrumental in the outcome of a battle."[1]

Perhaps one reason we tend to view deception solely in terms of war is that there is a general distrust of peacetime strategic deception even though it can deter war. We must allow deception in peacetime albeit for tactical use in planning and training for the future. Michael Mihalka states that "Lessons learned in war can be practiced in peace."[2] I will go one step further and state that those lessons must be practiced in peace. If not, they will become ghosts haunting us too late to do any good.

Deception is effective in several ways. First of all, strict operations security makes the enemy information hungry and willing to believe almost anything. By relying on the enemy's expectations and targeting his most reliable sources, deception can be successfully injected into an operation making the enemy extremely sure of himself but wrong.

Deception ties up enemy intelligence in terms of time, resources, and personnel. Because analysis is such an exhaustive process, friendly commanders can exploit deception and surprise their misinformed enemy counterparts.

Deception can overload the enemy by providing so much information that both intelligence and communications nets slow down. The sheer volume of message traffic would reduce net operational efficiency.

If the enemy intelligence officer sees through a deception operation, the friendly commander can still choose an alternate course of action. In this way, the commander can maintain surprise and discredit the enemy intelligence system.

Finally, deception can confuse as well as surprise. By disrupting enemy momentum, deception can discredit, delay, demoralize and deny information to the enemy, thereby assisting command, control and communications countermeasures (C^3CM).

Peacetime planning, training and resource development are all a part of successful wartime deception. But first let's consider the role intelligence plays in these operations. Intelligence is the prerequisite to all deception. The intelligence officer must know the enemy better than the enemy knows himself. His strengths, weaknesses, critical nodes and intelligence acquisition systems will determine how the friendly commander deceives the enemy. The intelligence officer will expose those enemy collection assets that are most vulnerable and most relied on. After assessing enemy assets, the intelligence officer will then recommend measures to help tell the deception story. The mea-

sures may range from visual and sonic to olfactory and electronic. The intelligence officer must also be intimately familiar with friendly equipment and capabilities. This will assist him in recommending specific friendly systems for targeting against enemy collection systems. Once deception is in effect, intelligence will keep the commander informed of enemy reactions to friendly deception.

Deception must be well synchronized with every tactical operation. Even if a commander intends not to implement deception, the option should still be available to him. Therefore, deception must be carefully planned and coordinated in advance with all commanders who have a "need to know."

"The perfect deception plan is like a jigsaw puzzle. Pieces of information are allowed to reach the enemy in such a way as to convince him that he has discovered them by accident. If he puts them together himself he is far more likely to believe that the intended picture is a true one. An endless variety of such pieces can be offered to the enemy."[3]

Deception plans must be based on what the commander wants the enemy to do, not what the commander wants the enemy to believe. Granted, the enemy's beliefs play an important part in what the enemy will do. But, I believe if we do not gear our deception plans to enemy action, deception will be doomed to failure from the start.

In order to give a commander more than one deception alternative, his staff must know what actions are best suited for a particular unit. A staff will know what to rely on by observing unit training. Once a unit has exercised several deception plans, the plans officer can incorporate the best of these into the commander's warbook. Deception plans are also based, in part, on a data base developed from training results. I propose these plans be synchronized using a type of flow chart or program evaluation and review technique chart. Technology can put tactical computer hardware in the hands of the combat arms commander. Data base and PERT chart software will then become the bread and butter of the battlefield deception planner.

Training is important. A commander must be alert to OPSEC discrepancies in his unit. He must demand strict OPSEC adherence and immediate corrective action on violations. By frequent deception training, OPSEC discipline will become second nature to soldiers who might otherwise be a liability to their unit.

A commander must be aware of his syncrasies as well as those of his unit. He must do everything possible not to set patterns. Failing this, he must insure his deception planner becomes familiar with unit patterns and signatures by incorporating them into effective deception schemes.

Planners must train. A unit invites disaster when it does not include its planners in deception training. Commanders can reap huge profits from deception if that deception is well orchestrated. For the most part, planners cannot orchestrate unless they have practiced first.

Deception success has been well documented. One story deals with "Mincemeat," the now famous deception plan known as the "The Man Who Never Was."

". . .The top secret dispatch from England stated in its entirety: MINCEMEAT SWALLOWED WHOLE . . .Hidden behind the three cryptic words of that message (and it remained hidden for ten years) was one of the most novel subterfuges of the war. . .the plan produced spectacular results and constituted, in the opinion of military analysts, a strategem equal to anything ever attempted in history. . .The hoax known as "Operation Mincemeat". . .concerned a decoy, and it took the form of a human corpse."[4]

We cannot afford to let the enemy use us as part of his deception plan. Only an unrealistic enemy commander would not order his soldiers to take protective action. V.G. Reznichenko, a Soviet military writer, discusses similar precautions that a tactical commander would take when confronted with what he believes to be evidence of nuclear radiation.

"A new factor having great influence on the nature of an offensive under conditions of the application of nuclear weapons will be the *radioactive contamination of the area and air.* In the course of an offensive, leading now into great depths, the troops will have to surmount not only separate areas of contamination, but in a number of cases will for a long time have to conduct combat operations on terrain contaminated by radioactive and poisonous substances. This will complicate the offensive and will made it necessary to take special measures to protect subunits from radio-active and poisonous substances. In connection with this, under conditions of contemporary combat it is impossible to make a single correct decision without considering the radiation situation."[5]

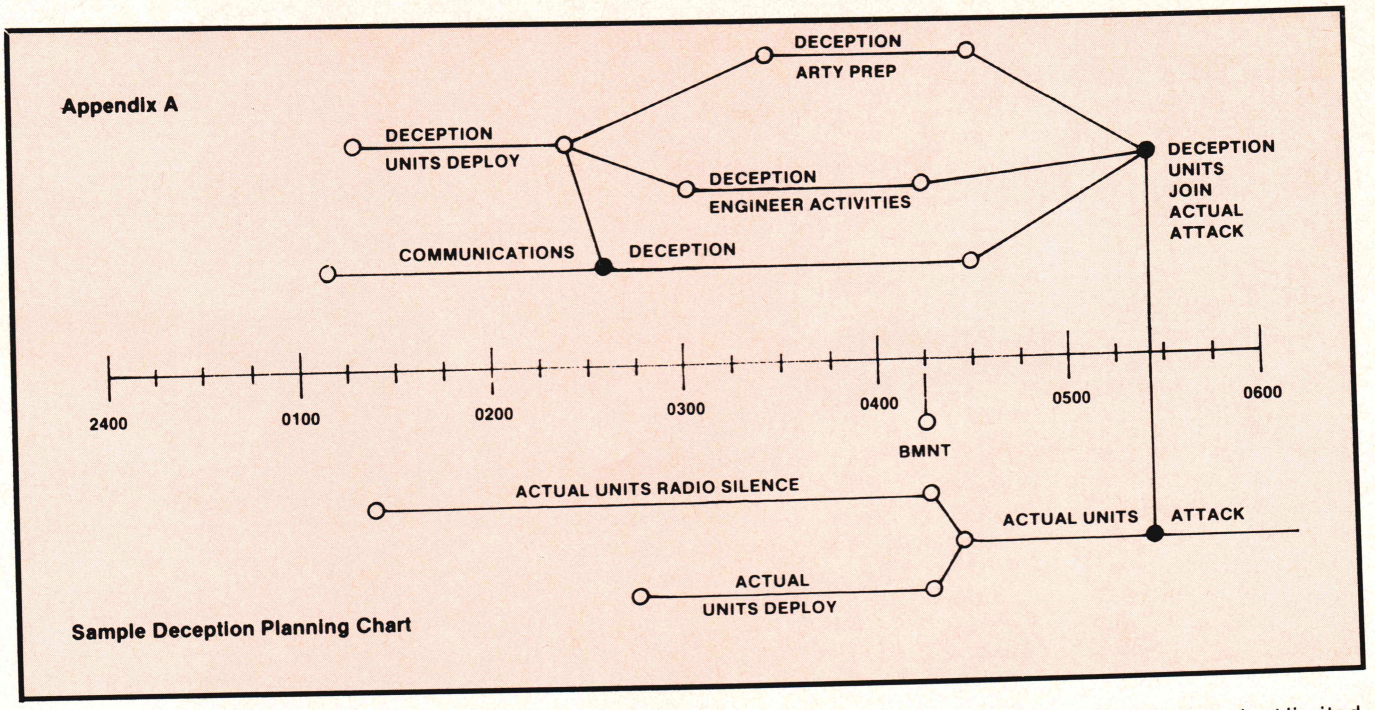
Of course, risk versus gain must always be weighed. The point is, we must train ourselves to think of deception techniques. The possibilities are endless.

Actual deception resources will also vary from the simple to the complex. They can be expensive or inexpensive, expendable or non-expendable, depending on the operation. Technology is growing with leaps and bounds. The capability exists to provide U.S. armed forces with the very best deception equipment. However, what we have on hand is limited.

Deception requires coordinated planning and synchronized execution to assure credibility.

Resource development is another key to successful wartime deception. A portion of those resources consists of developing deception techniques. They may range from the simple to complex. For example, as a way to slow down and limit the enemy, why not order friendly soldiers transporting conventional ammunition to don their chemical gear? When the enemy believes he will soon be in a chemical environment, he will attempt to minimize troop exposure to chemicals.

"The Soviets believe so strongly in the utility of simulated activity that they have dedicated resources to the construction of collapsible mock-ups of various pieces of equipment. These mock-ups are transported to the site where they are to be used in knock-down form. It is estimated that one truck can transport 7-10 mock-ups of tanks to the front. To be totally effective, dummy positions must simulate a real position in terms of size, number of pieces of equipment for the unit



simulated, sound, light, activity of troops and so on. The Soviets frequently check on the effectiveness of their camouflage measures through observation, photography, radar, and aerial reconnaissance."[6]

We must not forget human resources such as long range reconnaissance patrols and cavalry units.

". . .During the course of offensive and defensive reconnaissance operations, cavalry and scout units also have the opportunity to conduct deception operations by executing screening operations that can add to the enemy's confusion and disorientation on a fluid battlefield."[7]

The Army can continue to ignore deception or it can take positive steps to incorporate deception into tactical planning and operations. The benefits derived from well-planned deception far outweigh the costs involved. The following proposals are certainly not all-encompassing nor are they listed in any priority of importance. They are designed to stimulate thinking in the direction the Army must take to make deception an effective combat multiplier.

□ ***Develop equipment in sufficient quantity, quality and diversity to support deception.*** The March 7, 1983, "Army Times" printed a photograph of an inflatable dummy Hawk air defense missile launcher being tested in Alaska. Equipment adds flexibility to a commander's deception plan. It enables a commander to "augment" his organic assets with what the enemy believes are additional troops and equipment. If a commander wants to expend the smallest amount of resources in conducting his deception operation, deception equipment is absolutely essential to success.

□ ***Establish deception planning groups down to division level.*** A group should consist of representatives from every Army branch. The group would plan deception for the commander and coordinate with the G3 to insure deception plans are exercised and incorporated into the commander's warbook. Groups could also include representatives from other services as required.

□ ***Develop a deception data base.*** This will give a commander flexible options and tailored flow diagrams for ease and speed of operations.

□ ***Increase intelligence training on enemy collection assets.*** A commander will rely on his intelligence officer(s) to recommend the best way to deceive enemy collection assets. Every intelligence officer and intelligence section must know enemy collection vulnerabilities.

□ ***Increase OPSEC discipline.*** Although we have taken great strides in this area, we still have a long way to go. OPSEC is the cornerstone of successful deception.

□ ***Use LRRPs to deceive the enemy in his own area.*** In addition to reporting enemy reactions to friendly deception, LRRPs could conduct limited deception operations in enemy territory.

□ ***Train, train, train!*** There is no substitute for this. We must start deception training as our service schools and carry it with us to our units. Well trained units are the envy of every commander. It is the poorly trained unit that is vulnerable to exploitation.

Deception is often praised after the fact and rarely planned in advance. Common sense dictates maximum use of this combat multiplier in future AirLand battles. We can learn from past successes and failures by planning for deception now.

The advantages that deception offers the tactical commander have been discussed. It can make the enemy very sure of himself but wrong. Deception can also tie up the enemy intelligence system and overload his communications network. It enables a commander to simultaneously surprise enemy forces and discredit enemy intelligence. Additionally, deception can confuse and demoralize the enemy as well as delay and deter his tactical operations. Finally, deception can conserve friendly manpower and supplies.

Deception offers its users high returns. These benefits can be realized if adequate preparation has occurred. Therefore, certain requirements are necessary for a successful deception operation.

A commander must have intelligence on the enemy prior to any deception. He must know what enemy collection assets are most vulnerable and how best to deceive them. A commander must also have intelligence throughout deception operations in order to keep abreast of enemy reactions.

Deception requires coordinated planning and synchronized execution to insure credibility. Training is absolutely essential to maintaining a data base of viable deception options for a commander.

OPSEC and the "need to know" principle help keep the deception plan from the enemy until the plan goes into effect. Unit patterns and signatures can be used to portray activity where none exists.

Resource and deception technique development are also important to deception operations. Resources and techniques must keep pace with technological developments just as the Army becomes more technologically oriented. Deception has grown more complex with the times. However, by developing now, we can keep pace with improvements in the field and be able to implement deception in any given situation.

All assets available can be used to conduct deception. This includes special groups such as LRRPs who can report enemy reactions as well as conduct limited deception.

All previously discussed requirements can be found in nearly every deception operation. Whether simple or complex, the essential elements are always there.

After discussing deception requirements, the following proposals were set forth to stimulate thinking in the direction of deception. Develop equipment in sufficient quantity, quality and diversity to support deception. Establish deception planning groups down to division level. Develop a deception data base. Increase intelligence training on enemy collection assets. Increase OPSEC discipline. Use LRRPs to deceive the enemy in his own area.

We must develop and implement a deception policy now. The Army has a relatively current Field Manual on tactical deception (FM 90-2, 2 Aug. 1978). But we generally tend to pay lip service to it. It appears we have not learned those lessons taught by previous wars. If we begin to plan and train now, we may be able to catch up to, and perhaps even surpass, the level at which we should be. As I've stated before, the Army can continue to ignore deception and its benefits into planning for future AirLand battles. I believe it is imperative that we change our attitude toward deception and make the most use of this extremely profitable combat multiplier. Deception must no longer be a planned tool of the higher echelons. It must become a part of the total force brought to bear on the enemy. Although it is an inherently risky proposition, well planned deception can reap enormous profits for the tactical commander. We must take deception seriously and plan now for its use in the next battle. ★

Capt. Elizabeth D. Estler graduated from Nebraska Wesleyan University in 1975 and was commissioned in 1977. She served as the 470th MI Group Plans and Training Officer from 1978-1980 during implemenatation of the Panama Canal treaties. From 1980-1982, Estler was assigned to the 1st Infantry Division, Fort Riley, Kan., as Division ASIC Chief, 101st MI Battalion (CEWI) and assistant S2, 2nd Brigade. Estler is currently assigned to the 513th MI Group, Fort Monmouth, N.J. Estler is a graduate of MIOAC, MIOBC and the CI course.

Footnotes

1. Earl J. Boyce, **Cover and Deception in World War II—Its Lessons and Doctrine Implications.** (Air Command and Staff College, Maxwell Air Force Base, Alabama), March 1982, p. 45.
2. Michael Mihalka, **German Strategic Deception in the 1930s.** (Rand, Santa Monica, Calif.), July 1980, p. 1.
3. Charles Cruickshank, **Deception in World War II.** (New York: Oxford University Press), p. xi, 1980.
4. Seymour Reit, **Masquerade: The Amazing Camouflage Deceptions of World War II.** (New York: Hawthorne Books) p. 161, 1978.
6. Kenneth C. Keating, **Maskirovka: The Soviet System of Camouflage.** (Garmisch, Germany: U.S. Army Russian Institute), June 1981, p. 12.
7. Geoffrey C. Davis, "The Three D's of Reconnaissance." Armor Magazine, March-April 1982, pp. 24-25.

FM input requested

Under the new TRADOC School Model, the academic departments at USAICS are now responsible for doctrinal writing. The Department of Human Intelligence is starting to research the following Field Manuals this fiscal year, and is soliciting comments from the field concerning them.

FM 34-52 Intelligence Interrogation (replacing FM 30-15)

FM 34-60A CI Special Operations (replacing FM 30-17A)

FM 34-999G Intelligence Collection Operations (replacing FM 30-18)

FM 34-999M Technical Intelligence (replacing FM 30-16)

FM 34-999E Special Operating Forces IEW Operations

Comments should be sent to Commander, USAICS, ATTN: ATSI-DT-HI-CD, Fort Huachuca, Ariz. 85635

ДУМАЙ КРАСНЫЙ

Training TOMORROW'S Army TODAY

by Capt. Glen L.C. Roberts
and Capt. James A. Hudson

The U.S. Army Intelligence Center and School at Fort Huachuca, Ariz., Fort Devens, Mass., established Computer Based Education Centers during 1983. Both schools are firmly dedicated to the development of training packages with state-of-the-art technology in education using microcomputers and interactive video systems.

As recently as November 1982, the use of computers in MI training was not being adequately addressed by the school. This marked advance has occurred in little over a year! How was it done? On December 3, 1982, Brig. Gen.(P) Sidney T. Weinstein, commandant of the Intelligence School, received a briefing titled "Computer Based Education: a Concept of Operations." This briefing was a hint of things to come. In place of the normal briefing slide screen stood a 50-inch projection television, the slide projector was replaced by a microcomputer, and the normal 20-30 slides were replaced by computer generated graphics, text, and animation. The results of this briefing were threefold.

First the terminology for computer based education that would be used at the school was accepted. These terms and definitions are:

Computer Based Education is any use of computers to support training. This term is also known as **Computer Based Training** and **Computer Based Instruction.** CBE was further divided into:

Computer Assisted Instruction is the use of computers to teach a skill. CAI is normally self-paced with the built-in capability to tailor the presentation to a given student based on preference, performance, and/or background. It is also known as **Computer Aided Instruction.**

Computer Supported Learning Aids is the use of computers to aid instruction or to allow a student to apply skills previously taught. A microcomputer generating audio-visual material on a 72-inch television under instructor control or a network of computers supporting exercise play are both CSLA applications.

Computer Managed Instruction is the use of computers to manage instructional resources. Scheduling of classrooms and maintaining a data base of training materials and grading are examples of CMI applications.

The second major decision concerned the organization of the CBE effort. It was recognized at the beginning that this would be an experiment in managing, designing, developing and applying new technology and CBE operations would effect all major elements of the school. Since there was no model upon which to pattern the CBEC organization, it was determined CBEC operations would spread across the three major directorates. The Directors of Combat Developments, Training and Doctrine, and Training Developments were each tasked to provide resources to establish and maintain a consolidated Computer Based Education Center.

The third decision was based on the concept that the full potential for the operation of the Computer Based Education Center would only be realized if it responded to a central manager. As a result the Director of Training Developments was given overall responsibility and authority for all CBE operations within the school. The DTD, DCD, and DOTD triad became fully operational in March 1983. With these three decisions as a "charter" the CBE effort rolled forth.

The tremendous strides achieved in CBE operations are a direct result of this cross-directorate triad. This cross-directorate effort was expanded to a four point diamond in July and now includes the Automated Management Office.

Today the Computer Based Education Center is the driving force behind CBE operations at both Fort Huachuca and Fort Devens. These operations involve three functional areas:

- ☐ Teaching computer literacy to both student and permanent party personnel.
- ☐ Developing and integrating automation to teach MI skills and to allow students to apply these MI skills.
- ☐ Using automation to manage CBE and school operations.

CBE supports these operations in several ways. The CBEC is capable of developing its own programming to support CAI. At the Intelligence School, CAI development is considered a team effort. This CBEC CAI development effort consists of a three step process:

The subject matter expert specifies the information which must be mastered to accomplish the training task.

The education specialists take the information provided by the SME and designs a CAI lesson. They are trained in the CAI technique and are aware of the various ways information can be displayed under computer control. They use the instructional system design model as they develop the CAI lesson.

The CAI system specialists are computer programmers who take the lesson design and actually write the courseware for the CAI package being prepared. They are also audio visual specialists who develop the interactive video (videotape and video disc under microcomputer control) por-

tions of the CAI lesson being developed.

The first effort was produced in-house by the DTD element of the CBEC. This was a program for the HP 41C hand held calculator for Battle Damage Assessments during the Military Intelligence Officer Advanced Course AirLand Battle Exercise.

To date, the CBEC has provided computer literacy training for students and permanent party personnel. Both CAI and CSLA packages have been developed for this. In addition three computer literacy/training packages have been developed for export to support MICROFIX. Over 50 hours of the current MI skills training is conducted with the support of CBEC products such as the BDA calculators and the automated collection plan. 200 copies of "THINK RED", a 32 lesson CAI package on Soviet weapons equipment, and organization have been sent to all major active and reserve MI field units. Fort Devens has developed interactive video for training RACAL maintenance.

The four corners of the CBEC DIAMOND highlight its current capabilities.

1. DCD has the Combat Development Support Facility. The CDSF is the source of software analytical and technical ability to perform development, maintenance, application, and training functions for software support. The CDSF is the principal organizational interface between the material developer and the user community.

2. DOTD has established a student center. Currently this center consists of 8 APPLE IIe microcomputers. This number will expand to 20 by the end of fiscal year 1984. Classes are currently taught to the 35C and interrogator students using these APPLE computers. The use of the student center will expand as the courses are developed by DTD and the interactive mode of the classes is increased. The DOTD controls the CSLA function of CBE.

3. AMO has established the Simulation Systems Management Office and is actively pursuing the use of the VAX 11-750 minicomputer for use during exercise play for message and scenario generation.

4. DTD has established the overall headquarters of the CBEC. This element has provided the overall guidance and educational specialists needed to develop the CAI packages. The crucial element of the DTD slice is the research and development section. In this section are the subject matter experts, education specialists, computer programmers, and audio visual specialists necessary for the CBEC to be fully capable of developing CAI courseware in house.

The highlights of the current projects under development are:

- Part II of "THINK RED"—Soviet Army Tactics in the offense.
- "SPEAK RED"—a Russian language program on common military terms with Russian pronunciation guides and speech synthesis.
- Additional MICROFIX training packages.
- Interactive videodisc program for MSQ-103A maintenance trainer.

Future projects will incorporate videodisc packages on intelligence preparation of the battlefield and CAI programs for map reading. "THINK RED-KOREA", and computer literacy for Artificial Intelligence. Additionally, Fort Devens will develop maintenance trainers for interactive CAI support to the MITTS, GLQ3B, and the GLR9.

For further information on development of CAI, interactive video or CBEC Operations contact: Commander, U.S. Army Intelligence Center and School, ATTN: ATSI-TD-CBE, Fort Huachuca, Ariz. 85613, AUTOVON: 879-3365/2352. ★

Notice to readers

Military Intelligence Magazine is experiencing many changes, and with these changes come problems. Most of these problems involve distribution of the magazine.

The Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., is now handling all paid subscriptions. Changes of address, renewals and new subscriptions are all handled by the GPO. Checks and money orders must be made out to the Superintendent of Documents. Changes of address sent to the **Military Intelligence** editorial office at Fort Huachuca will be forwarded, but will be delayed in processing. Another problem encountered with changes of address is the inclusion of the new address but not the old. These requests are impossible to process without full information. A copy of the mailing label speeds processing considerably. Please pass the word to friends and associates.

A recent purging of the official distribution list revealed many mysterious situations. Although the cards sent to most units were marked with an erroneous suspense date, most cards were promptly returned to us and proved beneficial. Several private individuals had somehow managed to acquire "free" subscriptions and were removed from our distro list. Only units, office symbols and duty positions will be recognized as acceptable for official list inclusion.

The new TRADOC School Model has been implemented at USAICS and **Military Intelligence Magazine** is under a new directorate at the school. We expect to move to a new location in January. Telephone numbers are expected to change and will be listed in the January-March 1984 issue. Also, our Post Office Box 569 address will be closed down soon. All correspondence should be sent to:

Commander
USAICS
ATTN: ATSI-TD-MIM
Fort Huachuca, AZ 85613

We hope to publish an update of the new USAICS organization in the next issue.

The Editor

Automated
Exercise Support

by Capt. Rudolph N. Garcia

Since automated intelligence and training systems will be fielded within the next 10 years, all military intelligence personnel will be required to become familiar with the capabilities and limitations of automation. MICROFIX, the technical control and analysis center, and the all-source analysis system, will be the primary automated systems being fielded in the intelligence community. The MICROFIX, which is based on Apple II+ computers, will support the analyst in the all-source intelligence section with capabilities such as video disk maps with situation overlays and order of battle files with various output reports. Additionally, MICROFIX will aid intelligence personnel in becoming computer literate before the deployment of future automated systems such as TCAC and ASAS. TCAC will serve as the interim system for ASAS. TCAC automates the management of the high volume of traffic and data flowing to and from the SIGINT/EW assets of the CEWI units. ASAS will provide automated all-source intelligence and analysis for division and corps commanders. Since automation will become an integral part of intelligence, the United States Army Intelligence Center and School has begun to develop automated exercises and train its students in the application and use of automated intelligence systems.

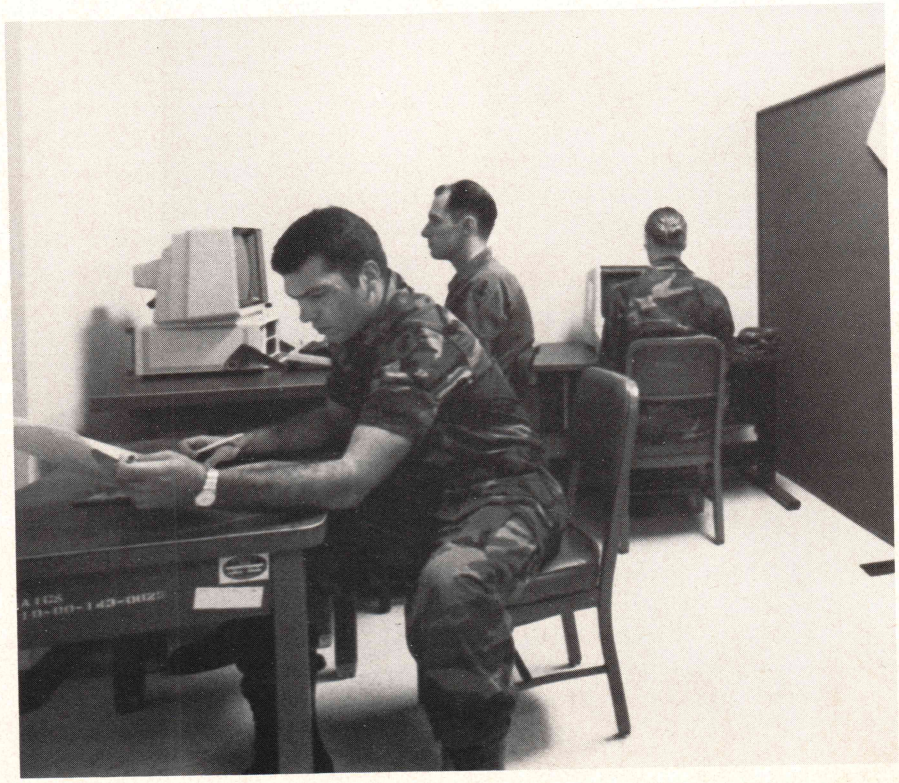
In July 1983, USAICS conducted its first automated end-of-course practical exercise for the Tactical Signals Intelligence/Electronic Warfare Officers Course (37A) using USAICS hardware, software, and personnel. It was the first exercise in which all three directorates and the Automated Management Office jointly participated. Training and Doctrine directorate provided the overall management and controllers. Training Developments directorate provided the automated collection management software. Combat Developments directorate provided the signal parametric analysis of critical nodes software, and the AMO provided the message stream/exercise management software using the VAX 11/750 minicomputer. DTD and DCD provided OTRONA microcomputers to run the collection management and SPAN software packages. Personnel from all three directorates and the AMO were present throughout the duration of the exercise.

The exercise ran approximately 48 continuous hours and used a modified SCORES II European short-warning scenario. Students were required to task SIGINT/EW assets from the collection and jamming platoons up through and including echelons above corps. The exercise emphasized SIGINT/EW tasking, equipment capabilities, and the flow of combat information and intelligence. It also stresses the command and staff relationships in a combat electronic warfare and intelligence battalion at division level.

Assigned as members of a C&J platoon headquarters, a technical control and analysis element at division, and a division tactical operations center support element, students worked 12-hour shifts rotating through each section. Each section had a VAX terminal (VT-100 or VT) which provided a stream of intelligence messages based on the tasking of each sections assets. The VT also provided each section the capability to file all incoming messages, retrieve messages by subject, date-time group, or any other specific element in the message. The VT gave the students the capability to either write or send their own messages to another section, simulating RATT communications, or forward a message they received to another section. The VT allowed the student to simulate full-duplex, landline communications. FM voice communications were simulated through TA-1 field phones.

Although not connected to the VAX computer, the automated collection management and SPAN software packages helped the student organize and task their assets and analyze the SIGINT traffic. Two OTRONA collection management microcomputers were

(continued on page 31)



37A students in TCAC section using the VT & CM Micro computer

INTELLIGENCE IS FOR THE COMMANDER

IEW SPR 82

INTELLIGENCE ELECTRONIC WARFARE SYSTEM PROGRAM REVIEW

IEWSPR UPDATE

by Capt. Marcus A. Kuiper

The Intelligence and Electronic Warfare System Program Review 1982 marked a turning point in the history of military intelligence. It tapped the knowledge and expertise of a wide variety of people and organizations throughout the Army, other services, and the national intelligence community to not only identify shortcomings in our doctrine, training, force structure, and material, but to develop a progressive and dynamic program to correct those deficiencies. The IEWSPR Action Plan was developed to show us where we are now, where we want to be by 1990, and how we are going to get there.

In October 1982, the IEWSPR was held at the U.S. Army Intelligence Center and School, Fort Huachuca, Ariz. This SPR recommended to the Army a comprehensive plan to improve IEW capabilities to support AirLand Battle commanders during the period 1983 through 1990. At the SPR, Gen. John A. Wickham, Vice Chief of Staff of the Army directed that the Army Electronic Warfare Intelligence Committee be responsible for monitoring the implementation of the plan, and that he be provided with periodic updates.

At the conclusion of the SPR in October 1982, a Draft Action Plan was distributed, and after staffing at DA was approved by the Deputy Chief of Staff for Operations at the February 1, 1983, AEWIC meeting. At that meeting, TRADOC was tasked by DA to manage the plan and the Intelligence Center and School was designated as TRADOC action agent for the Action Plan, status report presentations to the AEWIC, and subsequent in-process reviews. The Intelligence Center and School was also tasked to present an IPR to the VCSA in April, prior to the signing of the Program Objective Memorandum and to prepare an updated Action Plan for presentation to the AEWIC principals at their next meeting.

In February 1983, initial status reports, which included all IEWSPR actions, were received by the Intelligence Center and School from the MACOMs and DA. In early April, pre-briefs were presented to the deputy commander, CAC; commander, TRADOC; the DCSOPS; and the ACSI. On April 18, an IEWSPR Action Plan IPR was held for Wickham. Signifiant actions discussed were the CEWI complete program decision increment package of $507 million to provide IEW TOE and commercial substitute equipment for the Reserve component; the writing of an IEW capstone manual FM 34-1; Remotely Monitored Battlefield Sensor System; Long Range Reconnaissance; off-the-shelf equipment procurement; MI officer training; the TRADOC requirement for a tactical MI unit and a Combined Arms Team at the Intelligence Center and School; multi-year funding for IEW contracts; joint interface, and an Intelligence Electronic Warfare Developmental Architecture. Wickham directed that in October or November an IPR be presented to Gen. Maxwell R. Thurman.

Based on the initial status reports received in February 1983, and those due third quarter, fiscal year 1983 (June), the Intelligence Center and School has prepared an updated Action Plan. Additionally, the Intelligence Center and School has automated the Action Plan to allow for computer manipulation of specific types of information (i.e., actions by functional area such as doctrine, force structure, training, and materiel, or actions by milestone). This current SPR Action Plan data base will be transferred to a Hewlett Packard System in January 1984 and will provide the Intelligence Center and School with the capability to store, update, and retrieve data from the Action Plan on the same computer system that the ACSI currently possesses, and is using to monitor and implement the Army Intelligence Management Plan. The IEWSPR Action Plan is one of a number of plans providing input to the AIMP.

On June 28, 1983, the AEWIC working group approved the updated draft Action Plan for presentation to the AEWIC principals. The finalized updated Action Plan, with recommended changes and improvements incorporated (information cut-off date of June 30, 1983), was presented to the AEWIC principals for approval on August 25, 1983.

Panel I: What do we have now (1983-1985)?

Mission: Assess current IEW capabilities to fight the AirLand Battle, identify shortfalls, and recommend near-term (1983-1985) fixes.

Panel I surveyed field commanders to gauge attitudes and perception regarding the status and capabilities of IEW today. Responses were aggregated into seven major areas of concern and subjected to a detailed analysis. This data was then collated and used to produce seven primary issues which the panel would address. A total of 23 specific recommendations for improvements and 40 definitive actions to carry out those recommendations emerged from this effort.

Intelligence Collection: Tactical commanders require sufficient collection assets to see deep on the AirLand battlefield. Shortage of TOE items and the age and unreliability of equipment on-hand impacts adversely on training and readiness. Recommendations included fully funding the fiscal year 1984-1985 program for procurement of Intelligence, Surveillance, and Target Acquisition systems, and also funding and fielding the Remotely Monitored Battlefield Sensor System.

Department of the Army is continuing its effort to defend the current program on an "as required" basis by using the approved IEW architecture to develop the program objective memorandum and support the proposed budget.

REMBASS was fully funded in the fiscal year 1985-1989 Program Objective Memorandum. Fielding for the Rapid Deployment Joint Task Force will occur in fiscal year 1986. REMBASS has been successfully tested in Korea and is scheduled for Army-wide fielding fiscal year 1986-1990.

To continue improving IEW capabilities, the DA staff has aggressively pursued the CEWI complete Program Decision Increment Package contained in the proposed fiscal year 1985-1989 POM, which identifies $507 million for both TOE equipment and commercial substitutes to meet critical IEW needs in the Reserve components.

In addition, the Intelligence Center and School has identified an IEW Systems Architecture Strategy which will be used to prioritize equipment needs to assist in the development of the POM. This architecture provides a road map for the development and fielding of IEW systems based on need and technological feasibility. It builds on the systems in the fiscal year 1985-1989 POM and provides a year-by-year guide to expanding IEW capabilities for the 1990's.

Deep Reconnaissance: Corps commanders require a tactical ground reconnaissance capability to satisfy the intelligence requirements to see deep. Organic human intelligence resources are needed to deal with long-range surveillance, observation, and reporting requirements. Recommendations included developing a tactical ground reconnaissance capability by activating three National Guard reconnaissance companies and affiliating each with an active corps; and upgrading existing light weight communications equipment.

Since October, it's been determined that the Rangers are not the appropriate force to be used for long-range, dedicated, passive reconnaissance. Rangers are a theater-level asset with the primary mission of strike operations and tactical reconnaissance. Their training, however, does not prepare them for the long duration, passive reconnaissance and collection mission in support of the corps commander.

An operational and organizational concept for a new force dedicated to providing the long range HUMINT support required by tactical commanders has been prepared by USAICS and is currently being staffed at TRADOC. Current plans call for the organization to be organic to the CEWI group at corps.

The fielding of a new digital message device group (Code Burster OA-8990) will satisfy the lightweight communications equipment requirement for deep reconnaissance missions. Reconnaissance units began receiving these devices with associated equipment in April 1983.

Information Processing: The ability to rapdily process and analyze the volume of intelligence data available is vital to the tactical commander. The panel concluded that today's information processing system could be improved by the immediate fielding of available micro-processors and proposed that an acquisition strategy for off-the-shelf procurement be developed, that the off-the-shelf purchase of microprocessors be continued and that microprocessor applications be integrated into existing training courses and programs.

The non-developmental item (off-the-shelf) acquisition policy is defined in AR 70-1. The key to using non-developmental items is determining their environmental deployment factors, as commercial equipment typically does not meet the durability requirements of the tactical environment. Trade-offs must be established between performance and environment.

Microfix is an on-going Quick Reaction Capability under an AEWIC subcommittee to continue purchasing and fielding off-the-shelf micro-processors and to integrate them into field units. The Microfix management plan was published on January 26, 1983, and the Microfix System One contract was awarded on June 10, 1983. A total of 100 Tempest-approved systems were procured and the entire Phase I effort was provisioned. Congress has approved a $4.1 million reprogramming action which will enable FORSCOM to complete the purchase of the remaining 100 systems required for Phase I. As fielding begins in November 1983, soldiers will become more familiar with automated data processing equipment and better trained in its use.

TRADOC is examining field initiatives and lessons learned with micro-processors, to incorporate into the training base and training support packages. USAICS will use branch training team visits to gather information on lessons learned from field units and report to TRADOC. TRADOC schools will make necessary changes to Programs of Instructions on an "as required" basis.

Jamming: The ability to attack the enemy' critical nodes of command, control and communications through the electromagnetic spectrum is crucial for success on the AirLand battlefield. Presently, outdated doctrine, lack of TOE equipment, and the range and reliability limitations of current equipment impede our ability to fully carry out this mission. The panel decided that jamming doctrine needed to be clarified and support the early publication of applicable How-to-Fight manuals. It also recommended that off-the-shelf systems be purchased to upgrade collection assets and that off-the-shelf

acquisition of jammers be considered.

The second final draft of FM 34-1 (the capstone IEW operations manual) was published on May 11, 1983. Subject to approval by CAC, tentative final publication is scheduled for August 1984. FM 34-40, EW Operations, which will be in the field in coordinating draft in late 1983 or early 1984, will provide more specific EW doctrine.

In a concurrent effort, the Intelligence Center and School is developing a jamming architecture which will address all aspects of EW. The DA staff continues to support the procurement of jammers.

The feasibility of buying commercial equipment for Reserve component units was determined when FORSCOM submitted the fiscal year 1985-1989 PDIP on January 10, 1983. The fiscal year 1985-1989 PDIP was forwarded to DCSOPS for approval in February 1983 and on May 16, 1983, a Reserve component CEWI equipment procurement strategy was developed. Developmental and commercial jammers will be examined to meet Reserve component CEWI needs.

Dissemination: Tactical commanders must be able to receive and disseminate intelligence data with sufficient timeliness to fight the AirLand Battle. Old equipment, low restoration priorities and lack of responsiveness in communications currently inhibit our ability to accomplish this task. The panel felt that procurement and fielding of selected priority items must contine to be emphasized. Additionally, accelerating procurement of ground sensor terminals was urged, as well as accelerating development and procurement of commander's tactical terminals for selected units.

The current POM strategy gives combat net radios and Tri-Tac equipment a high priority. Within the communications mission area, 67 percent of the validated requirements were funded. IEW requirements are receiving a high priority, but within the existing funding level, there may be shortfalls.

The new UPD-7 ground station terminal for the AN/APS-94F Side Looking Airborne Radar system has been fielded. The Army is pursuing technological development of the Standoff Target Acquisition System ground station for possible adaptation and application as the Joint Stars ground station. Proposed fielding concepts envision employment of the Joint Stars ground station at corps, division, and brigade level.

The improved commander's tactical terminal is scheduled to complete research and development and begin production in fiscal year 1985.

Communication survivability and intelligence dissemination will be issues at the upcoming Corps SPR at Fort Leavenworth, Kan., in October 1983, and should include priorities for restoring lost communications.

CEWI Force Structure: The Army needs an adequate Combat Electronic Warfare and Intelligence force structure. The panel concurred that the Army decision to field CEWI was correct, notwithstanding that the equipment, training, personnel, doctrine and logistics would have to catch up. Four years after that decision, several IEW units still do not have the necessary people or equipment. The panel recommended that TRADOC consider a CEWI battalion force structure effectiveness study for solutions to improve CEWI effectiveness and that FORSCOM should expand the purchase of commercially available equipment for training. It also recommended that active component CEWI unit activations continue as scheduled but that Reserve component conversions be postponed until resources become available.

A Division 86 CEWI Battalion effectiveness study has been conducted and the results forwarded to Headquarters, Department of Army. In addition, continued use of the AMORE methodology will help determine the CEWI battalion's capability to reconstitute effectively after being degraded by combat action.

All active component units will be activated by fiscal year 1986. Personnel and equipment availability will have a major impact on unit readiness. However, the DCSOPS has designated the equipping of CEWI units as a high priority. Funds have been included in the proposed fiscal year 1985-1989 POM, to include an additional $507 million PDIP mentioned earlier, for a mix of IEW TOE equipment and commercial substitutes. In addition, selected off-the-shelf equipment was included in the $1,617 million identified as unfunded requirements in the fiscal year 1985-1989 POM. The DA staff is working with FORSCOM on Reserve component CEWI activations to determine what equipment requirements can be met by accelerated distribution and procurement, and what commercial equipment can be used as substitutes.

FORSCOM and HQDA are also working together to develop an activation schedule for Reserve component MI units. The goal is to initially activate only those units most capable of providing IEW support to their respective National Guard divisions. Activations will most likely occur in close coordination or conjunction with FORSCOM's new consolidated training facilities. The 138th MI Battalion (CEWI), from Chicago, Ill., is scheduled to activate in November 1983.

SCI Security Clearance Process: The next problem was the Army's inability to make timely clearance determinations for sensitive compartmented information access.

The current process is too slow and has adverse impact on morale and unit readiness. The panel found that the time required for clearance creates an untenable situation that must be corrected and proposed that DA consider reducing the scope of investigation, delegating authority to installation commanders to grant interim SCI, and expediting the process by optimizing the use of polygraph and psychological testing.

Procedures have been formulated to decentralize SCI adjudications during periods of mobilization in the interest of mission accomplishment. However, OACSI considers permitting installation commanders authority to grant SCI access during peacetime constitutes an unnecessary risk to national security.

Presently, Defense components are prohibited from using the polygraph for routine personnel security screening. Changes to the DOD policy on this issue are being considered and are currently in the Office of the Director of Security Plans and Programs, Office of the Security of Defense.

OSD is also examining the area of psychological testing to determine its effectiveness and practicality in the personnel security function. It is estimated that re-

sults of that effort will not be available before late 1984.

Panel II: What do we do next (1986-1990)?

Mission: Identify and recommend solutions to projected deficiencies resulting from the IEW Mission Area Analysis (1986-1990).

Panel II used the IEW Mission Area Analysis Level II report as its baseline source document. The MAA examined the Army 86 force structure against a postulated 1990 threat in a European scenario. The IEW requirements were compared with capabilities, and shortfalls were determined. These shortfalls were prioritized and used to form the foundation of Panel II's seven primary issues. The panel's analysis of these issues produced 21 recommendations and 98 actions to implement these recommendations.

IEW Collection: The panel pointed out inadequacies in planned IEW collection capability for target and situation development to support the 1990 AirLand Battle and recommended ways to solve them. The concept for the IEW use of remotely piloted vehicles identifies a requirement to locate, track, and dynamically display moving targets, as well as communications, and non-communications emitters; to improve the cross-flot fixed-target locating capability; and provide post strike analysis.

The Army's Aquila remotely piloted vehicle system is programmed to perform target acquisition and designation, aerial reconnaissance, and artillery adjustment missions. Recent advances in composite materials, low-cost engine technology, microelectronics, sensors, navigation systems, command and control concepts, data storage and data links have made applications of a variety of subsystem capabilities possible in packages small and inexpensive enough to create promising unmanned sensor platform opportunities for the Aquila.

An Intelligence Center and School RPV concept brief to CAC in March 1983, addressed these issues. The Aquila is scheduled to undergo additional flight testing at Fort Huachuca starting in August/September 1983.

In addition to the RPV, the developmental architecture contains new systems as well as improvements to current systems which will serve to augment and improve IEW collection capability.

OPSEC Support: Panel II concluded that viable OPSEC doctrine and deception support programs had to be developed.

In order to develop definitive doctrine for OPSEC support, counterintelligence, and HUMINT, a CI concept emphasizing a multi-disciplined approach to OPSEC and deception operations has been forwarded to TRADOC where it will be published as a TRADOC 525 series pamphlet. Concurrently with FM 34-1, FM 34-60, Counterintelligence, was written to support this concept and is now out in coordinating draft.

The Intelligence Center and School is also addressing the improvement and continued inclusion of OPSEC and counterintelligence doctrine into ARTEP documents as well as developing and revising collective training products. New lesson plans incorporating the CI concept into officer and enlisted training courses will be implemented in the first quarter of fiscal year 1984.

Tactical Jamming: The next issue identified was the need to expand current jamming capabilities. Joint ECM doctrine is currently being developed by TRADOC and the Tactical Air Command and will be published as doctrine when approved.

CAC is revising and rewriting TRADOC PAM 525-7, Joint Procedures for the Employment of C3 Countermeasures. This is a joint effort with the Air Force, Navy, and Marines. A coordinating draft has been written and is currently being staffed.

The O&O concept for the RPV includes a requirement for an overflight airborne jamming package. Once the concept has been approved, it will be incorporated into the appropriate field manuals.

The DA staff continues to support the procurement of jammers with adequate range and in sufficient numbers to support Army requirements.

TRADOC and the DARCOM Signal Warfare Lab are continuing in the development and fielding of advanced ECM equipment to extend our range and frequency capability to cover high pay-off targets.

Deception Program: A number of proposals were initiated by the panel regarding the Army's deception program.

CAC, in coordination with DARCOM, will address the requirement for theater-wide deception operations doctrine in the update for FM 90-2, Tactical Deception. This update is scheduled for completion by the third quarter of fiscal year 1984. In order to avoid delaying publications of FM 34-1, the results of these deception efforts will be incorporated as a change.

The combined arms sufficiency study has been finalized. The results of this study identify he type and amount of deception of deception training to be conducted at each level of schooling to include a possible deception course fo staff personnel, sensor planners and commanders. Incorporation of deception training into all field exercises will be done in accordance with AR 525-21, Tactical Deception (TAC-D) Policy (Including Camouflage, Countersurveillance, and Concealment).

Gen. John W. Vessey, Jr. directed at the Command and Control SPR to develop deception tactics and techniques for maneuver units. A a tactics and techniques for deception document was published by CAC in April 1983. The finalized version of this document will be incorporated into zhe FM 90-2 update.

Communications Support: Panel II expressed concern about the adequacy of communications support to the 1990 IEW architecture.

Communications requirements (Tri-Tac, Single Channel Ground and Air Radio System) are receiving a high priority, but there may be funding shortfalls.

The IEW centers and systems requiring access to and interface with automated, tactical switched networks have been identified. System capability requirements are being prioritized by having the IEW communications needs stated in the communications support requirements data base.

The SPR also addressed methods of operating in degraded modes. As automated tactical switched networks become available, backup communications and degraded modes of operations will be identified and acted upon.

Collection Management: The panel identified the requirements for 1990 tactical collection managers and analysts to be

able to effectively use all-source information.

FM 34-1, contains doctrine for both all-source collection management and analysis. More explicit doctrine will be contained in a series of manuals to be published subsequent to FM 34-1.

The new Military Intelligence Officer Basic Course began in October 1983 and is designated to produce all-source trained second lieutenants. Lieutenants will graduate as all-source combat intelligence officers and will later receive additional specialties.

An all-source collection management and analysis module has been incorporated into both the Military Intelligence Officer Advanced Course and the Imagery Exploitation Officer Course.

Enlisted personnel also receive collection management training in the 96B course. A decision on an all-source enlisted MOS is pending an analysis of the results of the IEW enlisted CMF functional review.

The Intelligence Center and School has already begun using multi-source simulators in resident instruction. To support non-resident instruction, collective training products are being developed.

In an effort to improve multi-source training, the Intelligence Center and School has requested that a CEWI unit and a combined arms team be formed at Fort Huachuca. The plan for the use of these organizations and justification was briefed to the DA staff on March 9, 1983.

DA is attempting to identify personnel spaces that can be internally transferred within the MI community to form a brigade support company of 189 soldiers that would perform the dual mission of school support and training, doctrine, and materiel development. The decision paper on this action is currently in the office of the VCSA. Approval is expected soon, with probable fielding being phased in over 1984-1985 as spaces become available. The remaining spaces required to round out a battalion-sized CEWI unit and form a combined arms team will be determined by using the TAA process in 1986. Equipment will be provided on an "as available" basis and will be phased in as spaces are identified. With the formation of this unit, realistic training for MI soldiers will be significantly enhanced.

Sustainability: Solutions that would provide satisfactory, sustained IEW support to the tactical commander in 1990 were recommended.

FM 34-1 identifies the relationship for shared coverage of missions by higher, lower, and adjacent units. Doctrine for IEW operations in support of RDF and in contingency corps areas is being developed for inclusion in FM 34-20.

The Required Operational Capability for SIGINT systems will require the systems to be interoperable within appropriate echelons and include the need for future improvements to interface with emerging systems.

In an effort to provide improved support and sustainability, IEW systems supporting heavy and light divisions have been identified and will be fielded to ensure that they have the mobility to satisfy the supported command's requirements.

Continued use of the AMORE methodology to examine CEWI effectiveness and capabilities will help identify cross training and MOS subsitutability requirements and may also prove valuable in identifying problems in this area, to include improvements required to enhance maintainability and materiel robustness.

In support of the RDJTF (CENTCOM), all required operational capabilities will include a statement that the materiel must be considered in terms of RDF and contingency corps deployability applications.

In addition, the 513th MI Group has been formed at Fort Monmouth, N.J., with a primary mission of providing echelons above corps intelligence and electronic warfare support to CENTCOM.

Panel III: How do we rapidly get what we need?

Mission: Determine what can be done to expedite the acquisition and fielding of intelligence and electronic warfare systems.

Panel III reviewed the entire Army acquisition process to include combat development, materiel development, test and evaluation procedures, RDTE and procurement programming and budgeting, and management procedures. They then isolated procedural bottlenecks, developed issues and specific problems, identified potential solutions and recommended tasks for incorporation into the Action Plan. In all, Panel III developed seven major issues and 56 recommendations with 87 actions and 100 specific tasks for incorporation into the Action Plan to shorten and improve the IEW systems acquisition process.

Long-Range Planning: The first issue surfaced by Panel III identified a deficiency in long-range planning efforts. One of the solutions recommended by the panel was to use Mission Area Analysis efforts, backed by simulation, to validate requirements.

AR 71-9, currently in draft, will require MAA reference as a fundamental part of all requirement documents when published. AR 71-9 is scheduled for publication in the first quarter of fiscal year 1984.

TRADOC regulations 5-4 and 11-8 direct the use of MAA and simulation models as a basis for conducting cost and operational effectiveness analysis which articulates the impact of systems requirements on battle outcome and compares alternative means of reducing or eliminating a deficiency in the force.

The developmental architecture has identified new systems and includes a battlefield laydown which demonstrates the interplay with other IEW systems. This architecture, which is in accord with the findings of the IEW Level Two Mission Area Analysis and the recommendations of the 1982 IEW SPR, will provide over time, an acceptable level of intelligence support to tactical commanders.

By using the MAA with its associated updated development plan, and the long-range research and development acquisition plan, we now can project requirements out 15 years for long-range planning. Continued efforts need to be pursued to expand this time window out to 20 years in order to provide better direction for exploratory development of techniques to meet these future threats.

And finally, there are three studies ongoing at TRASANA, MITRE Corporation, and the Jet Propulsion Lab to develop models to determine, validate, and define requirements for intelligence systems and organizations for all disciplines and their impact on the battlefield.

IEW Requirements Process: The second issue surfaced by this panel related to the

IEW requirements cycle and pointed out that it takes four to five years from a user's concept to the awarding of a development contract. The panel noted that we needed to be able to manage the Army's requirements process better. One of the recommendations of the panel was to reduce staffing time. Current TRADOC and DARCOM policy requires that worldwide staffing of requirements documents with MACOMS and other services be accomplished concurrently with the headquarters DARCOM formal coordination effort. This is to be done only once, and if adhered to, should reduce the loss of time during the staffing process.

DARCOM and TRADOC reviewed the IEW MAA, along with other MAAs, at the Army War College Mission Area Analysis Symposium in May. The IEW MAA was compared and correlated against DARCOM's exploratory and advanced development programs. This is an important step toward insuring that development programs are truly supportive of MAA defined deficiencies and requirements.

Recent reduction in the size of requirements documents from unlimited length to four pages, and the expanded emphasis of the TRADOC requirements review committee on document content should place adequate emphasis on brevity. But its ultimate impact on decreasing staffing time is yet to be determined.

The revised AR 71-9 will prescribe a single, simpler, format for all requirements documents to support systems development through the entire acquisition process. To better manage and control program changes,the new AR 70-1 will require that formal changes to requirements be documented and approved by the same authority as the original requirements. This will help to stabilize the requirements for a system and reduce cost and time overruns that might otherwise result from contract changes. To insure that provisions for changes or improvements are considered early in the development cycle, TRADOC has developed a policy which requires all ROCs initiated after the first of March to include, where possible, provisions for preplanned product improvements (P^3I).

A revised DARCOM-TRADOC Pamphlet 70-2, currently in draft and scheduled to be published 4Q FY 83, will provide instructions on the implementation of these changes.

System Costing and Funding: In its third issue, the panel pointed out the problems resulting from poor cost estimates and on-and-off support for programs.

In an effort to better educate our engineers and cost analysts, DA and DARCOM are looking at how we can best provide such training and improve the management of our programs. The level of implementation of this effort has yet to be determined.

The cost discipline advisory committee, chartered by the Secretary of the Army, and the DARCOM comptroller's policy letter in June of this year to the DARCOM cost analysis community, are two specific examples of efforts for improving the baseline cost estimates to the planning, programming, budgeting system.

In order to improve DARCOM and industrial cost management interface, DARCOM, through its participation in the American Defense Preparedness Association, routinely deals with issues associated with Army-industry partnerships.

Identification of IEW systems for multi-year funding was also identified by Panel III as a sensible strategy.

The OSD policy memorandum of May 1, 1981, placed responsibility for development of multi-year contracting strategies with the program manager. DARCOM is continuing to place emphasis on this policy as it attempts to increase both the number and dollar amount of multi-year contracts.

Reporting of multi-year contracting candidates is now an integral part of the budget process. The adequacy of selection and reporting of multi-year contracting for IEW programs, most of which are considered minor, will have to be determined. However, DARCOM has used this process for the fiscal year 85 POM submission for IEW.

Industrial Technology: In its fourth issue, Panel III noted that the Army doesn't make effective use of adaptable industrial technology to develop systems that provide near term responses to threat changes. They also recognized that documentation to suport training, maintenance, and logistics often lags behind the development of the system and consequently delays fielding.

Examples of efforts to solve the first part of this problem include the Manpack radio-direction finding system which uses straight off-the shelf technology; the Single Channel Communication System-Radar system which makes use of adaptable off-the-shelf technology, and the acquisition of micro-processors (Micro-Fix). Contact with industry has thus been improved and DARCOM should continue to actively identify technology which is applicable to solving Army IEW problems.

In the INSCOM-TRADOC Memorandum of Understanding, one of the services which INSCOM will be able to provide to TRADOC is an assessment of commerical technology.

Complete integrated system support during the engineering development process will help preclude the kinds of delays identified by Panel III.

Integrated system support policy is currently being developed by DCSOPS. Upon approval, a comparison of existing acquisition procedures will be made to determine what is required to implement the policy. In addition, DARCOM is developing a pamphlet which will clearly define P^3I philosophy (revised AR 70-15 will include P^3I requirements also) and the updated AR 70-1 will address market survey procedures in detail. All these publications are scheduled for completion during 4th quarter, fiscal year 1983.

Acquisition Procedures and Corporate Policy: In issue five, Panel III recommended that the Army develop acquisition procedures that will allow for concurrent research, development, and production for separate elements and components to include requesting long lead production authority from Congress.

The panel noted that the production of components and parts requires two years for fabrication system after successful completion of developmental testing, operational testing, and production decisions. Additionally, Congressional authorities have in the past discouraged concurrency in moving to subsequent stages of development before a previous stage was completed. As a result, we field obsolescence.

Up-front purchasing of software proto-

typing has been determined to be both feasible and advantageous. Cost overruns can frequently be attributed to writing software after the hardware has been received. The most recent draft of DODD 5000.29, published June 2, 1983, emphasizes the use of a software first approach with rapid software prototyping early in the system design and development process. DARCOM is working on this recommendation for the Army in general, but not for any specific IEW system.

In the area of Congressional approval for concurrency (continuance of RDTE and procurement), as well as multi-year programming, the DA staff is identifying selected systems for Congressional approval with the POM cycle. The All Source Analysis System for example, has been identified for concurrency.

In an effort to emphasize total system budget visibility, a method has been developed for concurrent display of RDTE, other procurement Army, and operations maintenance Army funds associated with each system acquisition. This method was used to help develop the fiscal year 1985-89 POM.

Developmental and Operational Testing: In issue six, the panel recommended that developmental and operational testing be shortened and improved. The TRADOC Materiel Evaluation Committee provides senior level management to approve test issues and criteria. Additionally, the test integration working group, a joint DARCOM/TRADOC effort, uses the coordinated test plan (AR 70-27), to minimize unnecessary testing and to focus on the critical issues.

In order to limit the number of DT and OT, TRADOC is examining the feasibility of an approach to include critical test issues and criteria as part of the requirements documentation, as well the impact of including the combat material developer test issues on the requirements document approval process.

The Intelligence Center and School CEWI unit and combined arms team mentioned earlier, if fielded, would be valuable assets to improve the quality of testing in support of the Electronic Proving Grounds and the Intelligence Security Board.

Interconnective Communications: In issue seven, it was recommended that communications be made available to insure needed interconnectivity between IEW systems and other elements of Army command and control subordinate systems.

The latest modifications to IEW communications requirements have been placed in the communications support requirements data base and will be further modified as requirements change. Because of the unique requirement of IEW for secure voice and data link communications, no off-the-shelf procurement alternative has been identified.

It has been determined that projected Army communications capacity and capabilities such as SINCGARS, Tri-Tac, and others will be adequate to meet IEW requirements. In addition, technical interface requirements have been completed for data interchange between ASAS and the other Army command and control systems.

Insuring that the user has the requisite communications equipment prior to delivery of IEW systems is an ongoing practice of the combat developer and DARCOM. Communications are considered at every stage of the stystems development process. It is acknowledged, however, that it is a difficult problem area which requires continuous attention on the part of both the materiel and combat developer communities.

Category IV: Additional Issues.

There are three additional issues which surfaced at the SPR which were not generated by the general officer panels. The first two issues addressed the failure of tactical commanders to receive sufficient IEW support from other services, national systems, and agencies. It was felt that this deficiency resulted primarily from inadequate fusion and correlation centers as well as the lack of doctrinal and organizational interface at the appropriate tactical echelons.

The All-Source Analysis System will be interoperable with the Air Force Enemy Situation Coorelation Element and will provide the capability to exchange data between the air and ground commanders on a timely basis. The Air Force requirement calls for a near-real-time transfer of almost all system data between specified nodes—a goal which may not be achievable for some years and which could result in increased cost based on increased complexity. The Army has a like requirement, but for a lesser volume of data. Reconciliation of these needs is ongoing, but not yet fully resolved.

Without the All-Source Analysis System and the Enemy Situation Correlation Element, both of which are being developed in the joint tactical fusion program, with the Army as the lead service, the ability of air and ground commanders to share common perceptions of the battlefield will be severely limited.

As part of the All-Source Analysis System development, doctrinal and organizational interfaces with other services, to include communications, are continuously addressed.

Additional communications interfaces between Army ASAS and Navy/Marine intelligence processing and reporting capabilities will be automated to the maximum extent and will use joint interoperability of tactical command and control systems standards.

To insure that information sources outside the IEW system are considered, the Army C^2 subordinate system has addressed the technical interface of maneuver control, fire control, air defense, and combat service support with the intelligence system.

The last issue dealt with the Joint Chiefs of Staff involvement in the IEW requirements process. Under the current reorganization of the Office of the Joint Chiefs of Staff, the review of the JCS impact on the IEW prioritization process is being evaluated. Specifically, JCS is preparing a letter for the Secretary of Defense that recommends JCS review and validate all military requirements for the Defense Reconnaissance Program.

Information for this article was derived from the current finalized version of the IEWSPR Action Plan (June 30, 1983) AEWIC principals meeting and the IEWSPR-82 article published in ***Military Intelligence Magazine's*** January/March 1983 issue.

(SUPPORT *from page 30)*
placed in the TCAE and the DTOCSE. Before a student could create the collection plan, the computer asked him to perform IPB, defining his area of interest, area of influence, adjacent units, rear area, avenues of approach, mobility corridors, name areas of interest, target areas of interest, and EEI/OIR. Then the student chose an asset to satisfy a specific EEI/OIR. The computer provided the student with the capabilities of a particular asset. Once the student had tasked an asset, he could recall that asset and the computer would give him the asset name, the EEI/OIRs it is satisfying, its time on mission, and its capabilities. The student could recall the entire collection plan or a specific EEI/OIR. Once the student retrieved specific EEI/OIR, the computer would display the assets tasked against that EEI/OIR.

In addition to the collection management packages found in the TCAE and the DTOCSE, the TCAE was able to use the SPAN packages to help identify the critical nodes associated with certain electromagnetic signals. The student could input the specific characteristics of a particular signal and the computer would associate that signal with a specific unit or node. The student decided whether or not that node was critical and either redefined his tasking or continued with his current collection effort.

The students used the field phone or their VT to contact the instructors in the control area. Messages could be sent back and forth from each student VT to the control VT. Instructors served as exercise controllers simulating the supported brigade's liaison office and IEWSE, the corps tactical operation center support element, the corps TCAE, and the SIGINT/EW assets at platoon, division, corps, and EAC. Because of the automation efficiency, instructors provided more personal attention to students.

Although not problem free, the exercise was quite successful. Controllers for this exercise were reduced by 50 percent from the previous hand generated exercise because of the increased, reliable automation. The VAX computer was operational 99.3 percent of the time. Since controllers were able to send messages to each student section via the controller VT, the excessive controller paperwork and manpower were greatly reduced.

From the student perspective, the message stream, collection management, and SPAN software packages enabled the students to reduce their paperwork considerably and eliminated the need for constantly creating a new collection management plan. The automated communications between sections significantly increased the speed with which intelligence was passed between the C&J platoon, brigade IEWSE, TCAE, and DTOCSE. The students were introduced to automation with real-world application in line with MICROFIX, TCAC, and ASAS. They were given the opportunity for hands-on, automated training while applying their knowledge of tactical SIGINT/EW operations. Most importantly, the students realized that although automation will increase their analytical and planning speeds as intelligence officers, they are still responsible for the decisionmaking which directs the collection effort, satisfies the commander's EEI/OIR, and keeps track of the enemy.

In the future, USAICS plans to modify the 37A end-of-course PE and make it an all-source exercise introducing HUMINT and IMINT message traffic as well as SIGINT. The exercise will be expanded for the MI officers advanced course and will incorporate the CTOCSE and corps TCAE as player positions.

Additional software such as a data base management system will be introduced to allow the student to create his own data base. Also, a message generator software package is under development which will let the student fill out preformatted messages such as the SCARF, RSR, MTM, and RTM, and immediately send them.

With respect to hardware, printers will be located in each section and an interface will be established to connect the OTRONA microcomputers to the VAX. This will allow the student access to all of the software packages.

All of these improvements will create a more realistic automation environment in line with MICROFIX, TCAC, and ASAS. The student will be trained in a greater number of software packages and hardware components. This training will enhance his value as an intelligence officer and prepare him for the high technology future which is waiting for us all. ★

OPSEC program

by SFC James M. Webb

The evolution of Operational Security was the result of efforts to enhance the existing programs of physical security, information security, signals security, and military deception. OPSEC is an aggressive security program for classified and unclassified material. Over the years, personnel have developed procedures and methods to safeguard classified material and information, but have been somewhat lax in their attitudes toward unclassified material and information. However, material doesn't have to be classified to warrant protection. Open source materials are estimated to provide the bulk of information to the Hostile Intelligence Services collection efforts. Statements such as "there is no safe in our office" or "we've gone this long without OPSEC" imply that we have nothing to protect and are inviting compromise.

Development of a feasible OPSEC program is needed and will be used for each unit. The OPSEC program requires all units echeloned down to and including battalions to designate an OPSEC officer, E6/GS-7 or above.

Personnel concerned with OPSEC relate to it as an umbrella-like oversight of all the security disciplines. This is often interpreted as meaning that OPSEC or the OPSEC officer has total supervision of all security disciplines. As the statement is presently written, the OPSEC officer having supervisory capacity over all security disciplines would be informed first of a matter, and would then inform the appropriate security discipline. In reality this does not happen. The appropriate security discipline informs the OPSEC officer of a matter and he coordinates actions to remedy the situation. From a practical standpoint, the OPSEC officer is an overwatch of all security disciplines. AR 530-1 says the OPSEC officer is not concerned with the management of the related but independent security disciplines but rather the overall coordination of all actions necessary and appropiate to deny the enemy information.

The development of an effective OPSEC program must be based on four key areas: Essential Elements of Friendly Information; the Hostile Intelligence Services collection efforts; vulnerabilities; and countermeasures. It is the joint responsibility of the OPSEC officer and each unit to ensure that these areas are identified and developed for any OPSEC related actions to be worthwhile. The most logical steps developed in progression for an effective OPSEC program are to identify the vulnerabilities; compare EEFI with HOIS collection capabilities; identify the threat to that information; and develop countermeasures (those steps taken to eliminate or degrade those collection capabilities). ★

After three years of developing, QUICKFIX, the Army's response to a 1973 "quick reaction request" is going to reach the theater of its inception, U.S. Army, Europe. In the years following its genesis, QUICKFIX has met and overcome nearly every programmatic challenge imaginable, ranging from inadequate funding to reliability problems with major components. Additionally, it has narrowly escaped becoming the host upon which bell and whistle promoters would have hung their parasitic wares. The Army's materiel and combat developers persevering, QUICKFIX will finally begin to support our combat soldiers as they train to fight and win the AirLand Battle.

Without going into the programmatic detail, QUICKFIX did not live up to its "quick response" billing because it was and remains a technically complex system. In our free enterprise system, solving technological challenges requires two principal commodities; time and money. And within reasonable limits one can be substituted for the other. In this case, a portion of the QUICKFIX development cycle occurred when defense budgets were being trimmed to the bone. Under these conditions, years slipped by before QUICKFIX technology reached fruition. In fact, had it not been for the users' collective voices and clearly articulated need, QUICKFIX would have been terminated in the 1970's.

With that brief review of the QUICKFIX development process as background, it is time to describe QUICKFIX and examine what the system will do for the combat forces.

by Lt. Col. Michael N. McCloy

QUICKFIX

QUICKFIX IIA

QUICKFIX offers, for the first time, an airborne intercept and jamming capability designed to target the enemies' division, regiment, and battalion FM communications. Designed to operate at various standoff distances from the forward line of troops and at altitudes dictated by such variables as threat, radio wave propagation, line-of-sight, weather, terrain, and vegetation, QUICKFIX can operate effectively in every operational environment. Survivability is assured by the careful mix of evasive maneuvers, terrain masking, and through the use of on-board survivability equipment.

QUICKFIX is being developed in two phases. The first phase includes an intercept and jamming capability, while the second phase adds direction finding to the initial capability. Phases are depicted by the Roman numeral after the system name. Additionally, each phase encompasses two subsystems designated by the letters A and B.

For example, QUICKFIX IA, the initial prototype, consists of the AN/ARQ-33 countermeasures system. The primary components of the AN/ARQ-33 are the two GLR-9 receivers and the one AN/TLQ-27A jammer. Mission equipment is mounted in a modified UH-1H helicopter, designated an EH-1H. The aircraft carries a crew of four (pilot, co-pilot, and two mission equipment operators). Six of these systems were built with three deployed to the 82nd Airborne Division and three to the 2nd Armored Division, giving the Army its first hands-on operational experience with the airborne intercept and jamming systems. The QUICKFIX IA systems fielded initially to the 522nd CEWI Battalion, Fort Hood, Tex., and the 313th CEWI Battalion, Fort Bragg, N.C., will have been turned in to Corpus Christi Army Depot for conversion to the IB model.

QUICKFIX IIB

The QUICKFIX IA becomes the IB when one of the GLR-9 receivers is taken out and a new jammer, the AN/TLQ-17A, replaces the AN/TLQ-27A. A total of 20 Phase IB systems have been procured and fielding the first systems is scheduled for 1st quarter, fiscal year 1984. Fielding will be focused on the European and Korean theaters.

QUICKFIX Phase IIA effort includes direction finding equipment as part of the AN/ALQ-151(V1) special purpose countermeasures system. The system is computer controlled and will detect, locate, fix, and jam enemy communications emitters in the VHF frequency range. Because of weight and space requirements for the mission equipment, the operators' positions have been further reduced to one.

The system is still in a modified UH-1H aircraft and has been designated an EH-1X. Ten of these systems have been procured and it is anticipated that fielding of the first systems will commence in 3d quarter, fiscal year 1984. These systems, essential for a complete operational understanding of the full-up QUICKFIX system, will be fielded to selected units in CONUS.

The final version of QUICKFIX under the current program is the Phase IIB variant. The mission equipment is basically the same as that of the IIA, but now a modified UH-60A, designated the EH-60A becomes the aircraft. With the increased weight and space capacities afforded by the "Blackhawk," the mission equipment crew consists of two operators to handle the intercepting, direction finding, and jamming missions. The Phase IIB system will replace the Phase IB and IIA systems in all active duty divisions between late fiscal year 1986 and fiscal year 1989. The test bed, designated the YEH-60A, EH-60A equipped with the full QUICKFIX equipment array, completed operational testing at Ft. Huachuca in August 1983.

QUICKFIX affords the division commander an immediate responsive capability to locate, monitor, and jam enemy communications in a manner never before achievable. For the first time, the commander can mass his electronic warfare assets at a critical point and just as rapidly refocus their disruptive power assets whenever and wherever the need arises. Further, when used in conjunction with the soon to be fielded TRAFFIC JAM and TRAILBLAZER systems, the division commander possesses the force multipliers the Army's tactical experts envisioned when they drafted the Air-Land Battle Doctrine. ★

QUICKFIX 1A & 1B

Management of Ground Surveillance Systems

by Capt. John R. Tiffany and 2nd Lt. Halima M. Lozier

In 1975, the Intelligence Operational Stationing Study reorganized division intelligence assets in a more responsive centralized structure. The Combat Electronic Warfare Intelligence concept made a change in techniques to ensure efficient use of intelligence assets and welfare of intelligence personnel.

Methods of using the ground surveillance systems were developed independently by each division with very little doctrinal guidance. In August 1982, a ground surveillance systems management survey (Tiffany, 1982) was mailed to all battalion S2s in selected Army divisions overseas and in CONUS, to gather information on methods used in the field to manage ground surveillance assets. Responses to the survey showed tremendous variance. For example, some S2s transferred responsibility for supervising GS assets to the S3, while other S2s insisted on specifying precise ground placement of each ground surveillance radar and individual remote sensor. The variance was a result of differences in division organization, unit-peculiar S2/S3 power structures, and an absence of explicit doctrine for GS management.

The survey information, together with existing doctrine, was used to develop more efficient management techniques now advocated by the U.S. Army Intelligence Center and School. In this article, we have attempted to outline the new management principles, specifically:

- To clarify the normal relationship of the S2 and S3 in surveillance planning.
- To define duties of key personnel in supported and supporting units.
- To describe the flow of information from surveillance sources through the division S2.

A major point of contention between the S2 and S3 is the reconnaissance and surveillance plan. FM 34-11 states that the S2 is responsible for writing the R&S plan, however, approximately 25 percent of the S2s responding to the survey reported that the unit S3 assumed this responsibility. The S3s involvement with the R&S plan is limited to providing the S2 with the scheme of maneuver and contingency plans. With this information, the S2 develops and implements the R&S plan, continuously coordinating with the S3 to insure that the R&S plan supports mission operations.

A second problem the survey identified was an insistence by the S3 to receive reports of combat information directly from R&S assets. Combat information is passed by the collector directly to the commander, S3, FSE or appropriate element that can use the information for fire and maneuver. It is also passed to the S2 for processing.

The duties of the S2, G2, and other key personnel in relation to the reconnaissance and surveillance plan are most easily understood by observing their actions upon receipt of a mission. The sequence of action begins with the battalion commander briefing his staff with general mission requirements for each staff officer. In addition to general intelligence requirements for enemy, weather, and terrain, the commander may task the S2 to provide him with real time information on enemy units in contact, detection of enemy in proposed areas of operation, and early warning.

One of the duties of the battalion S2 is to draft and implement the R&S plan. The commander announces his concept of the operation and identifies his priority intelligence requirements. The S2 identifies information requirements — information that must be collected for processing to answer the commanders PIR. The S2 prepares the R&S plan based on the IR.

During the preparation of the plan, coordination with the S3 is vital to insure the plan supports and does not conflict with mission operations. The completed plan is then forwarded to the brigade S2 with requirements for surveillance assets.

When the requested assets arrive at the battalion, the S2 briefs the section sergeant and teams on the tactical situation and issues them battalion CEOI extracts, TAC operating procedures and maps. Additionally, the section sergeant is provided with specific information requirements, missions, and general site locations.

If the teams are attached at battalion task force level, the S2 receives their spot reports. If assigned to company level, the S2 must coordinate with company commanders for their deployment and support. The spot reports from these teams are received by the commander and forwarded to the S2.

Command and staff interaction at brigade level parallels that of the battalion. Additionally, the brigade S2 has to consolidate the battalion R&S plans, eliminating duplication, and

ensuring complete coverage as required by information requirements.

The plan is forwarded to the division G2 with requirements for surveillance assets. The brigade S2 briefs the GS platoon leader on mission requirements and ensures administrative and logistical support of the GS assets retained under brigade control.

The division G2 staff also prepares an R&S plan and forwards it to corps. Following up on the plan, the G2 (CM&D section) must determine priorities for the allocation of GS assets and send tasking to the MI battalion.

At the MI battalion, the commander, through the S3, checks the tasking for discrepancies and forwards them to the GS company. At this point CM&D is notified of acceptance of the task and any shortcomings in meeting the tasking. The MI battalion S3 establishes direct contact for coordination between tasked ground surveillance company elements and supported units.

The ground surveillance company commander task organizes the platoons and assigns support missions to the platoon leaders. The commander also supervises mission performance and monitors service support of deployed elements through GS platoon leaders and the Intelligence Electronic Warfare support element.

Spot checks are made by the commander to the deployed platoons, to ensure optimum performance. He is also responsible for coordinating with the S1 for replacement of personnel and advising the MI battalion commander on employment of GS assets.

The GS platoon leader briefs the platoon on mission requirements, inspects the teams, and issues the CEOI's prior to their departure. He has to contact the supported brigade S2 and assist him in finalizing the brigade R&S plan. He also coordinates initial meetings between supported battalion S2s and section sergeants. The coordinating of passage of status reports is done by contacting the IEW support element. For the duration of the support commitment, the platoon leader supervises mission support activities and assists the brigade S2 in GS activities.

The flow of combat information and intelligence is reported through a number of channels. If the GS assets are attached below battalion task force level, they report directly to the supported unit commander on the command frequency, by wire, by messenger, or as directed by the commander. GS assets attached at battalion task force level or higher, report to the supported unit S2/G2 on the battlefield information coordination center net, or by other means as directed by the support unit S2/G2. Spot reports are sent to the unit of attachment according to the supported unit TAC operating procedure.

Targeting information from GS assets must be transmitted as fast as possible if the data is to arrive at the FSE or FDC in time to engage the target.

Administrative and logistic traffic is communicated by the GS section sergeant to the supported unit S1/S4 or G1/G4 on the supported unit administrative and logistical frequency through the net control station or as designated by the supported unit commander.

The proper management of GS assets are essential to give maximum information about the battlefield to the commander. Misusing these assets results in information that may be extraneous or insufficient. Coordination with the S3 is essential to ensure the plan supports the scheme of maneuver. Consolidating the surveillance plans from lower to higher level allows for maximum use of the assets. By following the designated communications channels, combat information and intelligence is reported to the right places in minimum time to make the information valuable and effective. ★

Cryptocorner Solution

★ ★ ★

Burning midnight oil.
Working late hours
Exact your toil
Tougher problems

SOLUTION 2:

The victory you scored.
The feeling you've triumphed,
Provides its own reward -
Successful cryptanalysis

SOLUTION 1:

Subcourses and TECs available for MI MOSs

The Extension Training Branch of the U.S. Army Intelligence Center and School at Fort Huachuca, Ariz., offers soldiers, civilians and foreign military a wide variety of courses to advance their careers and knowledge.

There are two types of subcourses and Training Extension Courses. Subcourses are available for group and idividual study, while TECs are for individual use.

In the 17K MOS, there are 21 subcourses and 24 TECs available. In 17M, there are four subcourses. In 26C, there are five subcourses and 62 TECs. In 96B, there are 35 subcourses and 31 TECs. In 96C, there are four subcourses and 10 TECs. In 96D, there are 32 subcourses and 36 TECs. In 96H, there are 13 subcourses. In 97B, there are 19 subcourses.

The TECs are available through local learning centers or by writing to: Commander, Defense Audiovisual Agency, ATTN: DAVA-LLW, Warehouse 3, Bay 3, Tobyhanna, Penn. 18466.

Subcourses are available by submitting a signed DA Form 145 to: Army Institute for Professional Development, U.S. Army Training Support Center, Newport News, Va. 23628.

All of these courses are available to Regular Army, Reserve, National Guard, eligible Department of the Army civilians, other domestic government employees and some foreign military.

Complete details on these courses are available by reading DA Pam 350-100, April 1983, Extension Training Materials Catalog.

Military Intelligence Analysts Prepare for War

by Capt. Alan R. Goldman

So this is it. Unbelievable! After three years of CPXs, FTXs, and an assortment of alerts, the unit has received a warning notice. In 96 hours we will actually be flying into staging bases in the Sinai for deployment to Kuwait. All hell has broken loose. The armies of the Ayotollah are massed along the Kuwait border, Syrian tanks are moving toward Jordan, and Moscow just warned the imperialists that any attempt to impede the progressive forces risks nuclear war between East and West.

Scene 1: G2 shop. 11th Airmobile Division. Requirements officer, Major Floyd, has just received tasking from division chief of staff to brief the commanding general in 48 hours on:

- The disposition, composition and strength of Iranian forces threatening Kuwait.
- Avenues of approach through Kuwait to Saudi Arabia and their trafficability for a variety of vehicles.
- The location and condition of landing zones in Southern Kuwait.
- The political disposition of Kuwait: population attitude toward deploying U.S. forces, the potential for terrorist and guerrilla activity, including sabotage from local forces and/or PLO.
- Local customs U.S. forces must observe.
- Water supplies: how much, where are they?

Major Floyd, what do you do? What do you do? *"I know, my buddy Capt. Henry on the all-source intelligence center of the 555th MI Battalion (CEWI) has all those 96 bravos and deltas working for him. This is a production problem. Henry, we've got a job to do."*

Scene 2: ASIC, 555th MI Battalion (CEWI). Capt. Henry yelling toward the map on the wall. *"Kuwait, dammit! Kuwait. They told me Persian Gulf. That's Saudi Arabia. My people do the Black Book everyday and Kuwait's never in it. What do I know about Kuwait? Mr. Dix, get your people together. We've got a challenge."*

Scene 3: Four hours later at the ASIC. WO1 Dix, Sgt. Kaye, Sp5 Lowe, Sp4 Highe. *"Sgt. Kaye, we've got a problem. Here are our EEI. In 36 hours we need the answers."*

Sgt. Kaye: *"Look, I reported here only two weeks ago. All I know are avenues of approach to the motor pool. But I have some good news. All our vehicles are purring like kittens. If Kuwait's the problem, I can get you there."*

Specialist Lowe: *"Don't look at me, Sarge. I've been a lifeguard at the swimming pool for the last two months. I'll tell you what. If you get some cross water action over there, I can put together a good water safety course for the troops."*

Specialist Highe: *"Mr. Dix, sir. Remember that mobile training course I took last year? I kept some notes. There is a crisis support office at INSCOM in Washington. All we have to do is send them a 161616Z message with our EEI and some money and they will fly down the answers."*

"Specialist Highe, send a message to Washington! They've got all the answers."

Scene 4: 36 hours later. Office of the commanding general, 11th Airmobile Division. Major Floyd. *"Sir, these 2 boxes arrived 10 minutes ago from INSCOM. Two Kuwaiti experts will be here the minute the weather clears. As soon as a sharp knife arrives, I'll have these boxes open."*

Fact or fiction? The units and players are fictional. The scenario bears too close to fact for comfort. This author's experience following training visits to four U.S. Army corps and one division does not instill a warm fuzzy feeling that MI in peacetime is preparing for the mission of fighting and winning the potential wars we face.

There is, however, good news along with the bad news. After lecturing and participating in practical exercises with over 200 soldiers, mainly 96 bravos and deltas, I am most encouraged that a high percentage of them are eager, intelligent young men and women anxious for an opportunity to do the job they were trained to do. Sure some—perhaps 20 percent—are in the wrong MOS; yes, school training needs more rigor and some focusing on collection management and tactical fusion analysts, but the main problem is lack of realistic in-unit training and preparation for war.

The ITAC/INSCOM mobile training team instructed echelons corps and below on the subjects of the national intelligence community and how to access it for data required to perform intelligence analysis. The response to the MTT was positive as evidenced by post-course evaluations and corridor conversations during breaks. As an instructor I learned at least as much as I taught.

This brings me back to the bad news. There is widespread discouragement and disillusionment among enlisted men, NCOs and young officers at the lack of meaningful work they are doing in their career fields. This feeling is especially strong among the enlisted ranks who often consider themselves "go-fors" for officers whose fear for their OERs transcend mission accomplishment.

We preach in the U.S. Army that we must be prepared to fight outnumbered and to win. It can be done: witness 35 years of Israeli history. One edge is first rate intelligence; a keen appreciation of what the enemy can and is likely to do. There is no short cut to this appreciation. It requires near full time study and analysis by those who will deploy with and support the corps and below decision-

makers. There is no magician in Washington who can make people smart, really smart, in 48 hours. The lead time is now for study and analysis. The data bases on weather, enemy and terrain are improving daily. The data must be worked and reworked against the designated threat for the tactical units. Unfortunately, this data gathering and analysis is practiced in the breach, not as the rule. Many 96 Bravos and Deltas are spending less than one quarter of their time performing analysis. They are not familiar with pertinent data nor even how to access it. Typing and background checks are not intelligence analysis within this frame of reference.

There is a widespread perception among these enlisted personnel that their officers live in fear of their OERs; thus they dare not risk allowing the specialist even to brief a senior officer. During a field exercise there is the case of the trained 96Bravos being sent outside the operations center for fear of embarrassing the officer in charge. Officers alone received and analyzed messages and even posted the situation map. If this approach is representative, the end result is unprepared enlisted personnel and officers with physical and mental burn-out, since even black coffee loses its effect two or three days into an exercise.

What is to be done? First, the misuse of the talents of enlisted and NCO intelligence analysts must be recognized as a genuine problem for military intelligence to overcome. The problem is complex in that it encompasses both human and mission related dimensions. On the human side, it appears that some officers may perceive the enlisted ranks as second class citizens basically employable as go-fors for the officers convenience. I do not believe this perception is true for the majority of officers, but even if it holds for 5-10 percent, that is 5-10 percent too many. The tyranny of the officer rating system is probably the greater threat to mission accomplishment. Fear of the unprofessional briefing, for example, takes precedence over substantive knowledge. The quality of the viewgraph may have to be sacrificed for time dedicated to demonstrate knowledge of the threat. The willingness to explain an ambiguous threat situation to a G3, chief of staff or commander is preferable to a crisp description of seeming verities which are in fact far from verified. In short, this is an argument for a priority of effort toward long term, in-depth analysis of the pertinent threat by our intelligence analysts with that analytical skill put to the test in frequent realistic scenarios. These scenarios can range from mini-CPXs fighting war games, manual or machine, in the ASIC to full-fledged field exercises, in which analysts analyze all message traffic.

Long-term studies and analysis probably will require a command-sponsored program to engage 96 Bravos and 96 Deltas in analysis for 20 hours each week on a series of problems which are mission-related. These can range from order of battle papers on divisions in a Soviet military district to terrain analysis and intelligence preparation of the battlefield in Central America. Officers can regularly engage in "what if" exercises with their enlisted and NCO intelligence analysts.

"Alright Sgt. Kaye, now that you and the entire engineers have analyzed the terrain and determined Highway Z is the primary avenue of approach, what are the alternative courses of action open to the enemy now that Highway Z has been effectively blocked?"

The object of the effort is to study real world mission requirements and sharpen analytical skills in order that soldiers of every rank are confident that they know the situation and can logically estimate courses of action even if all the lights and computers are blown out during the battle.

In order to raise studies and analysis work time to a higher priority in the pecking order of operational units, I offer the following recommendations.

□ INSCOM and DA staff clearly state a high priority to the development and improvement of skills in intelligence analysis, this priority to be communicated to echelons corps and below worldwide.

□ Training teams from TRADOC and INSCOM conduct annual intelligence analysis skill tests for officers and enlisted men to include practical exercises in which grades are given, recorded and reported.

□ Intelligence analysis skill training be made a subject for DAIG inspections. IG inspectors will keep careful record through time-accounting mechanisms of the amount of time each month the enlisted ranks receive experience and training in intelligence analysis.

□ Senior officers in tactical units to include G2s and MI battalion and group commanders be encouraged to institute mission-related, long-term analysis/tactical production programs and equally to conduct CPX/FTX training using IPB, situation analysis and other tactical requirements. Officers will insure through personal observation that the enlisted person is being properly exercised.

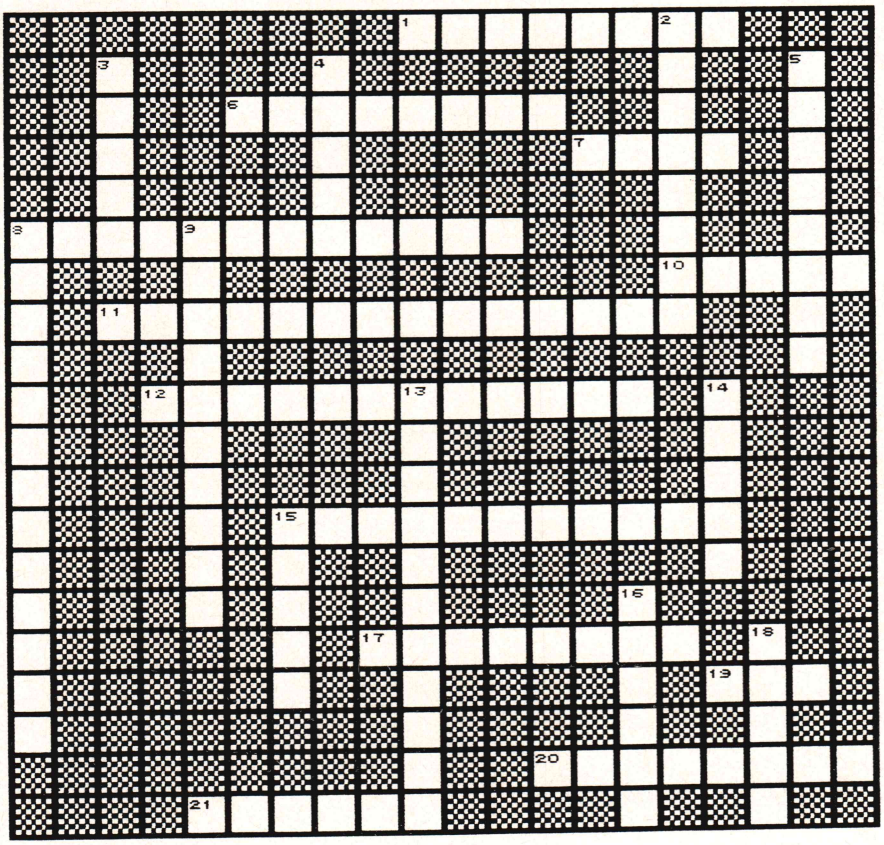
□ Encourage TRADOC to include in schools more intelligence analysis with the theme of supporting AirLand Battle 2000 in their curriculum for officers and enlisted and, if possible, generate interaction between them. (Indeed the entire U.S. Army must search for ways, perhaps beginning at ROTC and West Point for the officer to gain a better appreciation of the considerable untapped skills of enlisted ranks.)

□ Encourage REDTRAIN officers at corps and below to employ REDTRAIN funds for 96 analytic training. At present, training funds (which often go unspent) are funneled almost entirely into the SIGINT skill area. Better balance is required. Use of REDTRAIN funds should be closely monitored by REDTRAIN program managers at EAC to insure equity and to determine whether goals for training are being met. Strong emphasis should be placed on in-unit skill training.

The bottom line is that officers must give the enlisted man and woman an opportunity to do the job they want to do. It will help the officer and the U.S. Army and do wonders for the capability and morale of service men and women. ★

Capt. Alan R. Goldman is an intelligence operations specialist in the Plans and Policy Office, U.S. Army Intelligence and Security Command, Arlington Hall Station, Arlington, Va. He has a doctorate degree in political science and is a U.S. Army reserve captain.

Crossword Puzzle



ACROSS CLUES

1. ONE SKILLED IN LANGUAGES
6. RESEARCH;SCRUTINY
7. FACTS
8. CODED MESSAGE
10. MECHANICAL MAN
11. EXPLORATION;SCOUTING
12. INFORMATION;NEWS
15. EXAMINE;INSPECT
17. AUTOMATIC INFORMATION PROCESSOR
19. TOPOGRAPHIC CHART
20. COMPUTER'S RETURN TO INPUT
21. SAFE;CERTAIN

DOWN CLUES

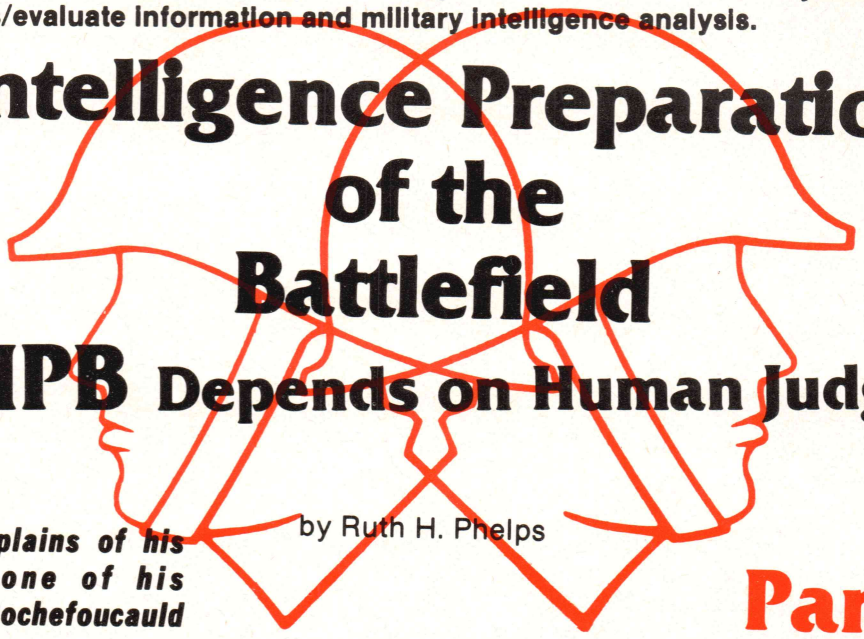
2. COMPUTER PROGRAMS
3. OPPONENT;FOE
4. LIGHT AMPLIFICATION BY STIMULATED EMISSION OF RADIATION
5. COMPUTER PRINTOUT
8. EXCHANGE OF INFORMATION
9. APPLIED SCIENCE
13. QUESTION SYSTEMATICALLY
14. OPERATIONS SECURITY (ABBR)
15. DATA FED TO COMPUTER
16. COVERT
18. ELECTRONIC SPOTTER

(solution on page 57.)

The U.S. Army Research Institute for the Behavioral and Social Sciences is a field operating agency of the Deputy Chief of Staff for Personnel. ARI researchers have been studying the human processes of intelligence analysis for 20 years and have been concentrating on the thinking processes of all-source analysis for the past five years. Some of their work on developing training materials for the new Tactical All-Source Intelligence Officer Course at USAICS was summarized in the April-June 1983 issue of MI Magazine. This article describes a study of IPB and procedures to assist the human judgment of intelligence analysis. Analyses of IPB are based on years of study of how humans process/evaluate information and military intelligence analysis.

Intelligence Preparation of the Battlefield

How IPB Depends on Human Judgment



by Ruth H. Phelps

"Everyone complains of his memory, no one of his judgment."La Rochefoucauld

Part I

It is quite apparent to the intelligence community that the sophistication of intelligence gathering and automatic data processing techniques currently exceeds the individual analyst's ability to integrate and interpret the information. As described in a previous issue of ***Military Intelligence*** (April-June 1983) the United States Army Intelligence Center and School, the Assistant Chief of Staff for Intelligence, and the U.S. Army Research Institute for the Behavioral and Social Sciences have joined forces to develop new training materials for the analytical thinking skills needed to interpret and integrate masses of information. In addition, the U.S. Army Intelligence and Threat Analysis Center and ARI have developed a handbook for strategic analysis which is based in part on the skills of analytical thinking.

The need to supply systematic procedures for the tactical analytical process was clearly recognized several years ago by the development of Intelligence Preparation of the Battlefield procedures. Although there was no concentrated effort to aid human thinking processes during the initial developments, IPB has nevertheless provided a systematic set of procedures that organizes and structures the analysts' tasks. This was a major milestone toward supporting quality intelligence analysis. In light of the recent studies of analytical thinking processes, IPB could be substantially expanded to provide better procedures for how to "think through" the steps of analysis in a logical fashion.

IPB is a tool to ". . . help the analyst 'visualize' the variables of how the enemy ***might*** fight on a specific piece of terrain at certain times." This is accomplished through "templating"—using a series of graphic illustrations of an enemy capability usually drawn as an overlay on a map. The templating process necessarily depends on analysts' judgments about the relevance, meaning and implications of multiple pieces of fallible data. TC 30-27 and FM 34-1, provide little information about just how to make these judgments, an oversight that may be reducing the value of the IPB procedures.

Hundreds of scientific studies of human judgment and decisionmaking, performed over the last 25 years, have reached one basic conclusion: human judgment is limited. The conceptualization of human rationality as limited, or even flawed, is a relatively new idea, one initially developed in large part by Herbert Simon, the 1978 Nobel laureate. As the quote by La Rochefoucauld at the opening of his article suggests, ones ability to use rational judgment is seldom questioned. People may complain that their judgments were poor because they didn't have enough information or the right information or information management system, but they will seldom consider that they didn't have the right cognitive or logical tools to make a good judgment. Yet, the scientific research suggests that this is often the case.

In the light of the latest findings, researchers specializing in judgment and decisionmaking skills have begun to develop techniques and computerized aids to help military analysts and decisionmakers. The research results strongly suggest that these new techniques will improve the judgmental accuracy of intelligence analysts who develop IPB templates, and the communication process for conveying the reasons for these judgments to commanders. By improving both judgment and communication the

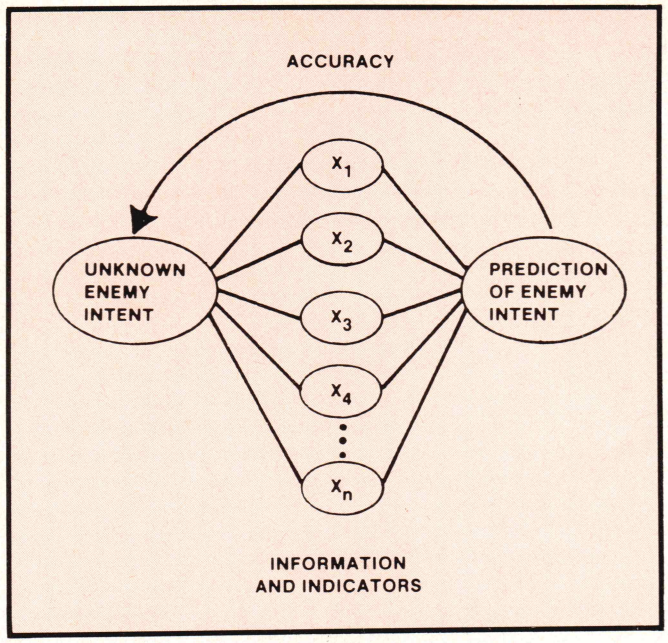


Figure 1. Indicators and other information are used as mediators for predicting the unknown enemy intent.

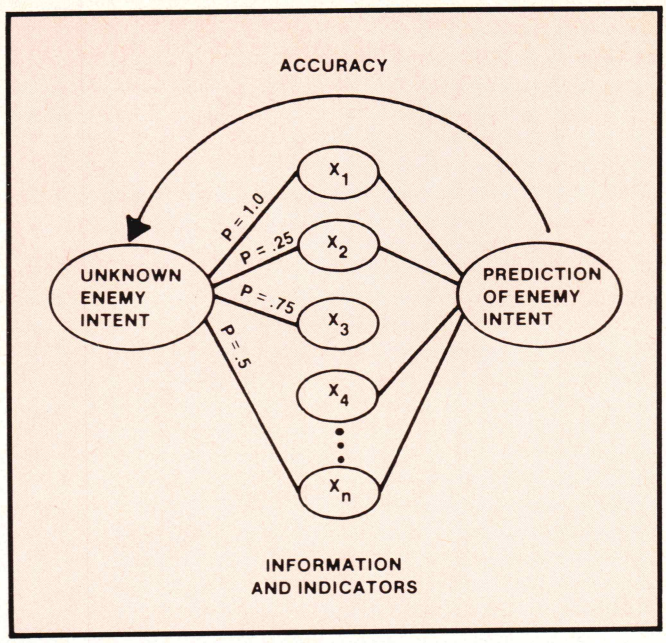


Figure 2. Information and indicators are unreliable, as shown by the probabilistic connection between the unknown enemy intent and the indicators (p=probability).

broader IPB analysis process should also be improved.

This article will demonstrate how the execution of IPB procedures depends on human judgment. A later article will describe how new computerized aids can improve the quality of judgments within IPB.

How an analyst makes judgments.

Figure 1 is a simplified diagram of the judgments within the intelligence process. The goal of intelligence analysis is to predict enemy intent or capability (the right circle). Because the true enemy intent is unknown (left circle), the intelligence analyst makes predictions based on information and indicators that serve as cues (center). Intelligence predictions are accurate to the extent they match true enemy intent, as shown by the arrow. Accuracy depends on how reliably the indicators reflect enemy intent and the degree to which the analyst bases predictions on the most reliable indicators. The identification and integration of the cues into the intelligence estimate depends largely on the personal judgment of the individual analyst.

The subjective nature of intelligence analysis becomes even more obvious with a more realistic representation of the intelligence process, Figure 2. There are at least three factors which complicate the analyst's judgment. First, each piece of information reveals the true enemy intent less than 100 percent of the time; in other words the indicators are unreliable. Secondly, the analyst may not use some of the indicators regardless of their reliability, as shown by the absence of lines on the right. Thirdly, some indicators which are not related at all to the enemy intent may influence the analyst's prediction, as shown by right side lines which are not connected back to the unknown enemy intent.

The intelligence analyst must perceive and think in terms of relative reliability. The question facing analysts is: "which information/indicators accurately predict the enemy?" The current IPB process essentially intends to determine relative reliability by a templating process; that is, by a series of illustrations of enemy capability which overlay a map. While this is a major improvement in systematizing analysis, additional procedures are needed to make explicit just how the intelligence and tactical information are to be converted into templates.

Human judgment during the five IPB steps.

"IPB is a continuous process of analysis and evaluation which is the basis of intelligence operations planning. . . The purpose of this analysis is to determine and evaluate enemy capabilities, vulnerabilities, and courses of action as the basis for friendly operations planning." The analyst follows the following steps during IPB to accomplish this purpose.

Threat evaluation. This step establishes the area of operations and identifies the general battlefield scenario. Threat evaluation of doctrine, tactics, capabilities, and equipment includes a review of order of battle intelligence holdings (for example, composition, disposition, strength, tactics, training, logistics, and combat effectiveness). This review is to develop doctrinal templates that indicate how the enemy likes to fight.

The doctrinal template is a standard against which order of battle holdings, such as disposition, can be reviewed. What is not pointed out in IPB however, is that the review of order of battle holdings is a complex judgmental process. The intelligence team must first evaluate a large amount of data, much of which may be unreliable, in order to decide whether it ***knows*** the order of battle holdings. Then, the team must integrate the order of battle holdings, complete or not, into a judgment of enemy intent.

Judgment is required because there is simply no alternative to it. A quote from ***Tactical Order of Battle: A State of the Art Survey*** describes the

situation:

> "Each OB Factor is defined in terms of a number of information elements which indicate the kind of data required to describe the status of that factor in narrative terms. No specific rules exist, either formal or heuristic, for the evaluation of factors or elements, or their combination."

The lack of "specific rules," or in terms of IPB, "templates," for making order of battle judgments is a part of each of the key problems identified by Bowen et al. in 1975, listed in Table 1.

In addition FM 34-1 does not offer a method for making the judgments inherent in threat evaluation. Intelligence analysts are still on their own to combine data as they see fit. While the IPB templates represent the output of this judgmental process, they provide no means for representing the basis for the judgments. In terms of Figure 2, IPB documentation fails to show the probability of connection between actual enemy intent and the indicators of intent.

Areas of Interest/Areas of Influence Determination and Evaluation. Based on FM 34-1, the purpose of step 2 is to narrow the scope of the IPB analysis to specific geographical areas and timeframes. Apparently this information is provided by higher headquarters and causes little concern for the analyst. The general information needed to conduct the later steps (e.g., maps, weather data, etc.) is to be gathered at this point. There is no indication of what these data should be, nor of any method the analyst should use to determine the relative importance and cost of gathering these types of infomation. Failure to obtain available information or analyze critical data types may have serious consequences for later predictions, predictions made in the time-pressured battlefield when background information cannot be gathered and evaluated.

Terrain and Weather Analysis. TC 30-27, and FM 34-1 tell analysts how to make judgments about the military aspects of terrain and weather in the IPB analysis process. Terrain analysis is basic to determining enemy avenues of approach into the commander's zone. The IPB analysis team must focus its analytical efforts on five military aspects of terrain: observation in fields of fire, concealment and cover, obstacles, key terrain, and avenues of approach. Toward this end, the IPB documentation contains a factor and subfactor analysis matrix, and a list of terrain requirements. Thus, it provides a structure for analysts' judgments which result in map overlays. This analysis also provides a retraceable procedure for telling the commander how the judgments were determined.

The IPB process also addresses the effects of weather on ground and air mobility and line-of-sight. The "weather factor analysis matrix" and "weather parameter-user matrix" relate weather factors to a wide range of military operations. The result of the next step is a set of overlays that integrates both terrain and weather data into a picture of ***possible*** interactive effects of enemy capability to move, shoot and communicate within different mobility corridors.

Threat Integration. This is the final step in the IPB analysis process. The objective of threat integration is to relate "how the enemy likes to fight" to a specific terrain and weather scenario, to determine "how the enemy might have to fight." This is accomplished through the use of situation, event, and decision support templates to help commanders "visualize" enemy capabilities in a particular combat setting. These templates also require intelligence analysts to make a number of different kinds of judgments, which are described below.

The ***situation template*** shows how enemy forces probably would look within the different mobility corridors under consideration. The analysts developing the situation template, therefore, use the terrain and weather analyses to modify the doctrinal templates for the enemy threat evaluated. The judgmental process which underlies the development of this template is complex. As stated in TC 30-27:

> "While the enemy commander may not have the unlimited options as to possible courses of action, he will probably have enough options to make the analyst's job of determining probably courses of action extremely difficult. Situation templates are derived based on the best military judgment of the

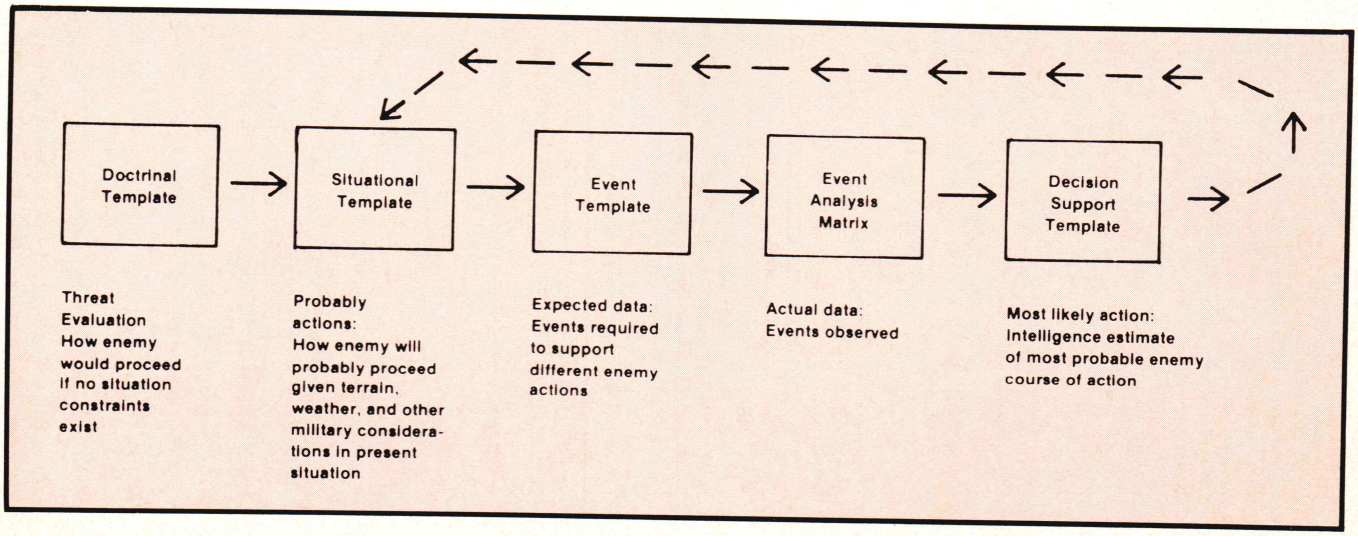

Doctrinal Template
Situational Template
Event Template
Event Analysis Matrix
Decision Support Template
Threat Evaluation How enemy would proceed if no situation constraints exist
Probably actions: How enemy will probably proceed given terrain, weather, and other military considerations in present situation
Expected data: Events required to support different enemy actions
Actual data: Events observed
Most likely action: Intelligence estimate of most probable enemy course of action

Figure 3. The Template Revision Process

analyst."

If the situation template is to reflect the best military judgment, the analyst must go beyond how to perform a terrain and weather analysis. Army doctrine should also identify the other, more ambiguous factors, such as perceived U.S. force strength and risk, that an enemy commander will certainly consider. Furthermore, the trade-offs the enemy commanders are likely to make when evaluating the utility of different courses of action should also be discussed. Rarely will one course of action be better than all others on every factor. Enemy commanders differentially weigh aspects of their doctrine against the characteristics of the immediate situation. What these trade-offs are likely to be under different terrain and weather constraints must be indicated if the situation template is to represent good military judgment. It should describe the left side of the model in Figure 1, which describes how the enemy tends to make judgments.

Event templating is the identification and analysis of significant battlefield events and enemy activities which provide indicators of the probable enemy courses of action. It is a projection of what will most likely occur if the enemy adopts a particular course of action. This is to be accomplished by identifying "Named Areas of Interest" along each route where the analyst expects certain events or activities to occur. In addition, the analyst is to complete an event analysis matrix that ". . . correlates the expected events and activities with each NAI. . .and adds the dimension of time." The event template is to be a combination of the situation template and the event analysis matrix.

The event template must identify the different types of information to confirm or deny the adoption of a particular course of action. To accomplish this, the analyst must make a series of conditional probability judgments similar to those shown in Figure 2. The word "probability" must be emphasized: there is no perfect relationship between indicators, events, and actual enemy intent. In addition, the enemy will be expected to use deception measures. As a result, the intelligence team must make conditional probability judgments about which indicators and events are most related to different enemy courses of action. IPB documentation does not provide information about the probablistic relations between different indicators and different enemy actions.

Development of ***decision support template*** is the third and final effort in threat integration. This template ". . . relates the details of event templates to decision points that are of significance to the commander. . .the decision support template is the intelligence estimate in graphic format." It represents the analyst's most up-to-date estimate of the enemy's potential courses of action. IPB documentation provides no explanation of how to distinguish real from deceptive events for each course of action. As a result, the intelligence team will make conditional probability judgments about indicators and events on the basis of personal opinion. In terms of Figure 1, the documentation omits the right side of the model, the reasons for judgment of enemy intent. This may result in decision support templates that are not as accurate as they could be and difficult to communicate to commander.

The dynamics of IPB: template revision. The templating process is not intended to stop with the first decision support template. IPB is initiated long before hostilities occur . . .is continuous; it is not completed until the battle is over. This iterative revision process is critical to friendly tactical decisionmaking; friendly commanders will make particular decisions, and take subsequent actions, on the basis of intelligence analysts' estimate of enemy intent. This estimate must be revised continuously as new information is received. The faster the information can be correlated with enemy intent, the more time friendly commanders will have for tactical decisionmaking and action.

Template revision is shown in Figure 3. The support template at the end of one cycle of the IPB process is the situation template for the beginning of the next cycle. Event templates and

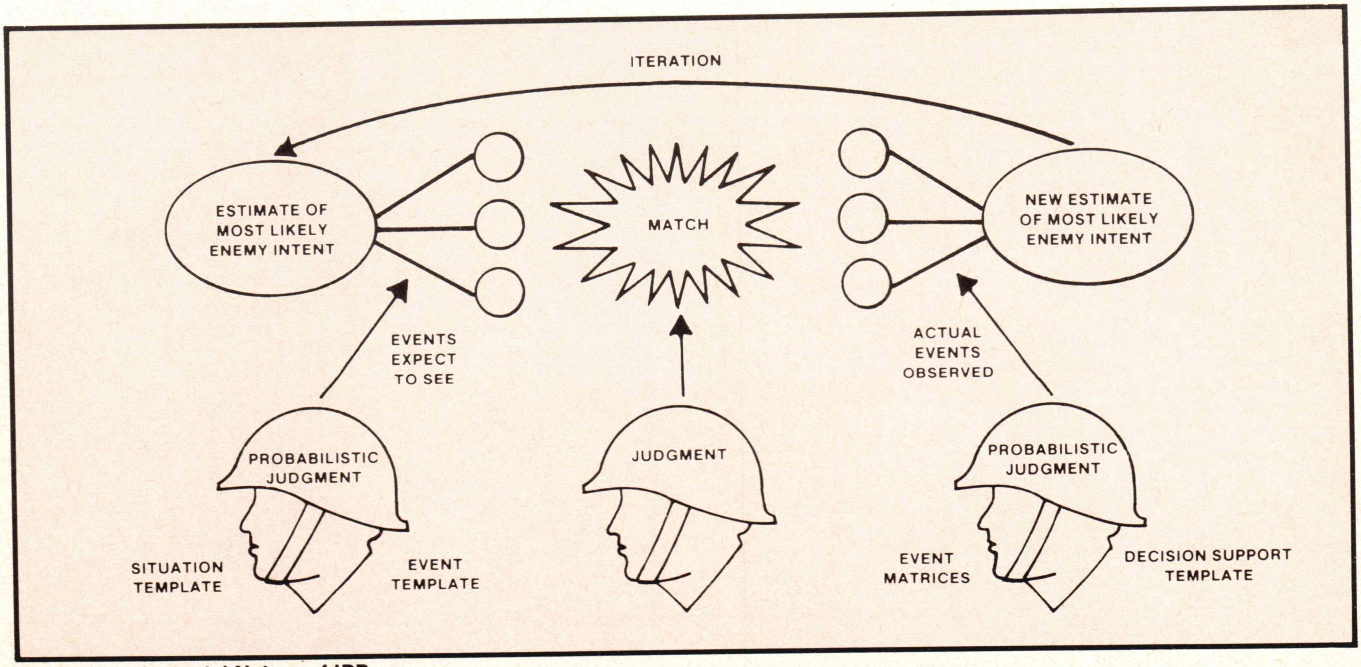


Figure 4. Judgmental Nature of IPB.

Key Problems in Order of Battle Judgments

1. **There are no standardized methodologies for estimating OB factors.**
2. **There are no standardized methodologies for incorporating OB factors into the products of OB intelligence.**
3. **There is no methodology for estimating and reporting reliabilities of OB factor estimates nor the significance of levels of OB factors and their elements relative to general descripters of the state of enemy forces, such as Combat Effectiveness.**
4. **There are not realistic and generally accepted definitions of the OB factors of Combat Effectiveness. A serious ambiguity of rationale about estimating enemy Combat Effectiveness derives from the point of view of the estimator. (A G2 thinks in terms of enemy force, while the commander or G3 is concerned with the enemy's net potential effectiveness relative to friendly forces in the existing circumstances.)**
5. **There is no indication in doctrine of the relative importance of the OB factors, or of their interrelationships.**
6. **There are no consistent, validated indicators, data aggregates, or data elements for the various OB factors and their elements.**
7. **There is no methodology for relating the elements of an OB factor to each other, or to the factor itself.**

[1]From Bowen, et. al., 1975.

Table 1

event analysis matrices are used to convey revised estimates of different enemy actions. These revised estimates are reflected in the new decision support template.

Template revision is heavily dependent on a complex judgment process. First, the intelligence analyst must identify the initial hypotheses regarding possible enemy courses of action or avenues of approach and, if possible, make an initial estimate of the most probable one. As discussed above, this requires consideration of how the enemy generally makes judgments, and an evaluation of how terrain and weather factors favor different courses of action.

Secondly, the analyst must indicate the events that are likely to be observed for each action. The information within event templates represents intuitive conditional probabilities. FM 34-1 describes the process as "a projection of what will most likely occur if the enemy adopts a particular course of action. The information within the event template represents certain events for different courses of action. These probabalistic judgments are not being made numerically when an analyst develops the template, but they ***are*** being made intuitively.

Thirdly, the analyst must use the many pieces of potentially fallible data to revise the initial hypotheses about the enemy. Subsequent decision support templates represent the analyst's most up-to-date intuitive estimate as revised by newly acquired data.

The three areas of judgment in the revision process are represented by the modified model shown in Figure 4. The situation template indicates the analyst's military judgment about the different enemy actions. The event templates indicate which events the anlayst expects to see in support of each course of action. The event analysis matrices indicate the events reported in intelligence data. "Seen" events are matched with "expected" events in order to develop a revised estimate which is in turn represented in the decision support template. This decision support template is now the situation template for the next iteration.

Conclusion. Execution of IPB procedures depends on sound military judgment. It appears from IPB documentation that good judgment is perceived to be unimportant, automatic or untrainable. The scientific research on human judgment has clearly shown that good subjective judgments, even those made by highly trained experts, are by no means automatic; human judgment is clearly limited and sometimes biased. There has been a great deal of study of procedures that encourage and train people to make higher quality judgments, from simple rules to advanced mathematical techniques.

Footnotes

An extensive discussion of the concepts and analyses summarized in this article is available in "Application of Decision Analysis Methodologies to Intelligence Preparation of the Battlefield" by Leonard Adelman and Michael Donnell. Alexandria, Va., U.S. Army Research Institute for the Behavioral and Social Sciences, 1982.

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SOVIET ENGINEER SUPPORT
(MINE WARFARE)

By Bob Lovely

The Soviets have recognized the need for and extensively use engineer support. This is equally true in offensive as well as defensive operations. This article deals with one of the vital roles of the Soviet engineers - mine warfare.

At the organizational level, engineer troops are assigned through regimental level in all Soviet maneuver divisions and platoons are sometimes detailed down to the battalions for specific operations. The Soviets may even assign motorized rifle or other troops to perform engineer tasks, when necessary. Troops of all arms and services are trained to perform basic combat engineer tasks such as building weapons emplacements and trenches, camouflaging weapons and equipment, and emplacing and clearing mines by hand.

The Soviet concept of engineer support includes the attachment of support units from higher echelons to those front lines in contact with the enemy. Engineer unit tactical employment does not always follow strict organizational lines. Each unit organic to a maneuver unit is commanded by a Chief of Engineer Services. He ensures that engineer efforts are concentrated to support a main offensive effort or critical defense sector.

In the offense, the primary mission is to assist in maintaining a high rate of advance. Emphasis is on clearing and maintaining routes for the advance of maneuver elements. This includes the clearance or removal of mines.

Engineers are included in all reconnaissance elements of tank and motorized rifle units. Engineer reconnaissance provides information about assembly areas, detours around obstacles, and warning of minefields and craters. An engineer reconnaissance patrol is equipped with portable mine detectors and route marking flags and may have a vehicle-mounted mine detector for mounted mine reconnaissance of roads and trails. Inherent in the movement support function are all associated engineer activities which facilitate the movement of maneuver forces. A Movement Support Detachment is task organized from division or regimental engineer assets and is tailored based on the mission. The MSD can fill craters and clear mines. During marches, the MSD travels in advance of the main body, clearing obstructions reported by division reconnaissance elements.

The normal Soviet method of breaching minefields during an assault/rapid advance is to employ mine plows, fitted to lead tanks. Although engineers will reconnoiter the minefield, the initial breaching is not primarily an engineer task. Engineers assist in the fitting of the plows or plow-rollers to the tanks. Combat vehicles follow these plow-equipped tanks in the breaching of the minefield.

The Soviets also employ a mine-clearing device mounted on the BTR-50 PK APC. This piece of equipment fires an explosive hose (line charge) across the minefield and is then detonated. This equipment is particularly useful during an assault river crossing when there are minefields on the other bank.

Minefield laying is most rapidly accomplished using armored tracked minelayers. Hand emplacement and towed minelayers are also used. Special teams from regimental and division engineer assets are formed into Mobile Obstacle Detachments. Their mission is the rapidly lay mines in the most likely enemy avenues for attacks or counterattacks. MODs are positioned on the flanks of a march formation to be prepared for rapid deployment and normally are in close proximity to the anti-tank reserve. Minelaying helicopters, which dispense mines from a chute while flying at a height of five meters, may also be employed. Anti-tank minefield density is usually from 750 to 1000 mines per kilometer.

Engineer tasks accomplished during the conduct of the defense are implementation of obstacle plans, particularly anti-tank obstacles, to block enemy penetration. MODs may join the anti-tank reserves to counter enemy tank threats.

The engineers are charged with constructing the more complex fortifications. Additionally, engineer troops normally construct barrier systems which are coordinated with the overall system of fire. The first priority in the barrier system is given to anti-tank obstacles. Additional maneuver routes for the rapid and concealed employment of counterattack or blocking forces are prepared by engineers, to include mine clearances within the defensive area, if required.

Obstacles are created on approaches into the defensive position, in front of artillery and air defense firing positions, in the undefended gaps between strongpoints and on flanks. Anti-personnel minefields are emplaced forward of the FEBA to give added protection to anti-tank minefields or to protect gaps between defensive strongpoints.

More detailed information on Soviet engineers may be found in DIA publication, DDB 1100-382-82, Warsaw Pact Ground Forces Equipment Identification Guide: Engineer Equipment; FM 100-2 series; and Foreign Material Catalog, Volume 13. ★

AUTOMATED AIDS for INSTRUCTORS

by 1st Lt. David Renaud

Computer Based Education can be subdivided into three separate areas; Computer Assisted Instruction, Computer Managed Instruction and Computer Supported Learning Aids. Whereas CAI refers to a one-to-one relationship between the student and the computer and CMI refers to the administrative use of the computer (student records, grade keeping, etc.), CSLA refers to the use of the computer by an instructor to present classroom instruction. This article outlines techniques of using the computer as an instructor aid and the planned future role of CSLA for training at the Intelligence Center and School.

The Intelligence Center and School's Computer Based Education Center has been operational since mid-March 1983. The center, which is comprised of elements from the Directorates of Training Developments, Combat Developments, and Training and Doctrine, and the Automation Management Office was established to take advantage of technological advancements in the microcomputer field and to apply them to intelligence training needs.

Specific computer supported learning aids techniques available to the instructor include the ability to use the computer in lieu of, or as a supplement to, viewgraphs and slides in the classroom. The school has acquired two 72-inch "big screen" projection televisions for this application. Using the APPLE II microcomputer system and educational software applications packages developed for the APPLE, the computer can store frames of text, or diagrams and has the capability to mix color, sound, and animation to enhance classroom presentations.

The Intelligence Center and School will soon have a videodisc production capability which will allow actual photographs and film segments to be integrated into computer-driven training lessons.

Another key application of CSLA will be in support of training exercises.

The concept behind this application of computer technology is to have a master microcomputer station for the instructor or evaluator and several netted slave stations for students. The student stations will be configured to represent intelligence training cells (i.e., TCAE, DTOCSE, EW platoons, etc.). Group or individual student performance in each cell can be monitored or evaluated by the instructor at the master station.

In July 1983, the use of computers to support training exercises at the Intelligence Center and School was prototyped in the 37A End-of-Course Practical Exercise. Cells comprising the Technical Control and Analysis Element, the Division Tactical Operations Center Support Element, and EW platoons used automated aids developed by the Computer Based Education Center including automated collection plan worksheet and Signal Parametric Analysis of Critical Nodes software packages. These packages were used in conjunction with a computer generated scenario which was developed by a timed SIGINT message stream from a VAX 11-750 mainframe computer.

While the exercise was not an actual simulation of intelligence play, it was highly successful, especially in terms of the instructor's ability to more effectively monitor student performance.

Currently, APPLE II microcomputers are also being used in support of 96D and 35C imagery exploitation training at the Intelligence Center and School. The computers are placed on photo interpretation light tables and a data base program is used to drive the practical exercise.

As technology continues to progress rapidly and new applications are developed for microcomputers, their ability to support and enhance MI training becomes increasingly attractive. Past success and promises for the future virtually guarantee the proliferation of new ideas for applications of computer supported learning aids to enhance classroom and exercise instruction. ★

Combat Developer's Support Facility

by 2nd Lt. William Kelly

Automation is all around us, from talking soda machines to robots welding bumpers on cars. Computers have become house hold items as common as color television.

You can hardly pick up a magazine or newspaper these days without reading an article about the explosion of automation. Automation is all around us, from talking soda machines to robots welding bumpers on cars. Computers have become household items as common as color television. The computer boom has not gone unnoticed by the U.S. Army. The automation applications to battlefield systems are widespread. There are over 90 distinct battlefield automated systems currently at various stages of development within the Army today.

Computer systems involve two major components: hardware and software. Hardware is the physical equipment which makes up the computer. Software is the computer instructions or programs and data required to direct the computer equipment to perform certain functions.

The Army has well-established procedures for maintaining and supporting equipment in the field, including computer hardware. But how does the field user get support for sustaining, improving or modifying the software in fielded automated systems?

Before answering, it should be noted that the Army alone uses at least 59 different computer types from 29 different manufactures. In addition ten high-order software languages and at least 30 different machine-oriented languages used in these systems complicate support.

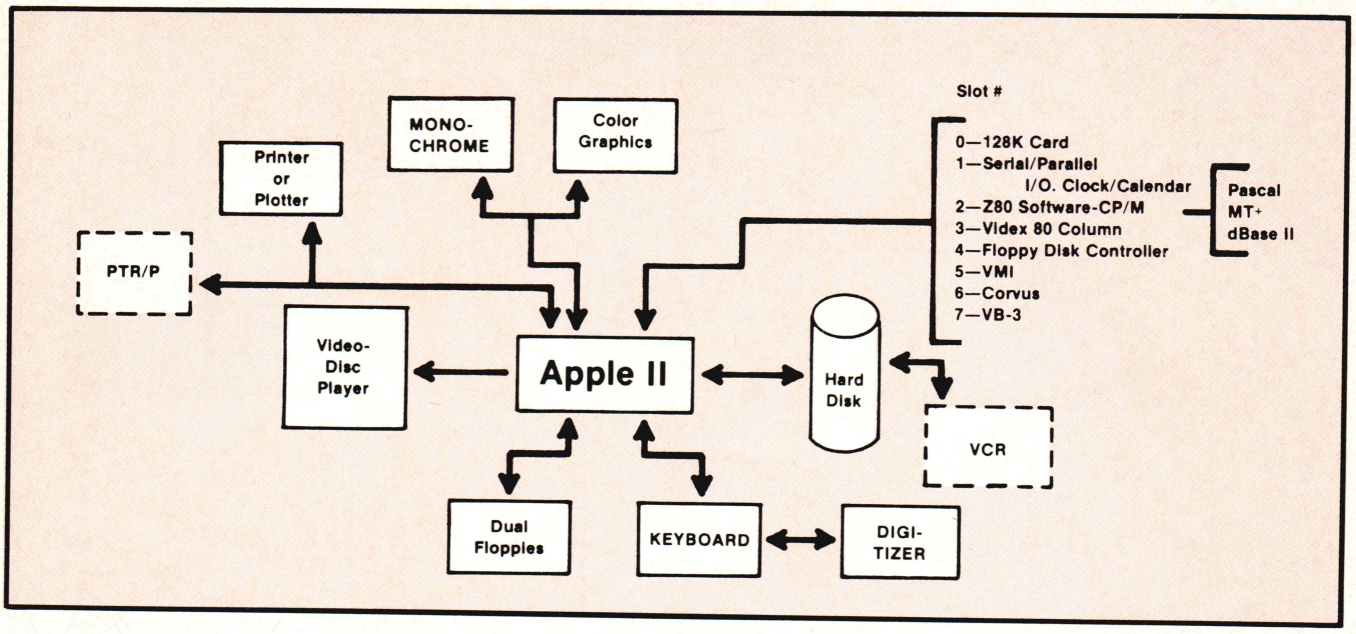
This support had been provided on a system-by-system basis, resulting in a wide range of support strategies with varying degrees of responsiveness to the user. This method was inefficient because it did not take advantage of the economy of scale that could be obtained by centralizing the support.

The solution is a relatively new concept plan called post-deployment software support. This plan establishes software support to be carried out by a joint effort between the material developer, DARCOM, and the combat developer, TRADOC. The concept identifies a DARCOM PDSS center to be established with the TRADOC proponent for battlefield functional areas. TRADOC will also establish a counterpart to the DARCOM PDSS called the combat development support facility.

In the past, several problems were identified with fielded software that created a need for a software support agency at the TRADOC level. Software was delivered to the field without adequate documentation or training, resulting in difficulty in maintaining the software. Because of lack of support, inappropriate hardware maintenance was being applied to software maintenance. Unnecessary testing delays existed in fielding revised software versions. Systems were constantly evolving, creating a need for constant software changes. Many other problems resulted in the support for the software not being planned for during the development cycle of the automated system.

It was clear that USAICS did not have enough qualified personnel to meet these goals immediately. USAICS contracted the Jet Propulsion Laboratory in Pasadena, Calif., to provide the technical expertise that was needed to meet the CDSF goals. One of the first goals of the CDSF was to create a data base of tactical I/EW automated systems and their related software.

This data base permits the CDSF to quickly evaluate software changes, and serves the basis for future automated analysis tools such as simulations. It also provides the means to catalog and better understand I/EW software; and includes feasibility studies for specific intelligence analytic techniques, scenario generators,



and simulations.

The data base uses a large and complex system known as problem statement language/problem statement analyzer. Adept has been extremely successful in allowing information to be quickly entered into a VAX computer.

In less than a year, the data base has grown to include information on 15 tactical systems with over 6000 data elements. Since JPL has been authorized to run a secure ADP facility, the data base includes classified information on seven systems. Once the data has been collected, validation and analysis begins.

As a part of the analysis of documentation of automated systems, potential discrepancies are occasionally noted. These discrepancies are primarily inconsistencies in the documentation and/or the implementation of software. These discrepancies have been noted both within a single system and between two or more systems.

These differences have ranged from differences in data element names and formats to differences between software documentation and software itself. As these discrepancies are identified, JPL notifies CDSF, and CDSF notifies the appropriate Army agency to initiate corrective action. The identification of these discrepancies has proved to be an important side benefit of the CDSF program.

Many automated systems are linked to enable them to share information and enhance their capabilities. Such a link is known as an interface. An example of an interface would be QUICKFIX passing information to TRAILBLAZER.

Through the use of the CDSF's data base it has been possible to study interfaces between tactical I/EW systems. Message formats and hardware devices are examples of interfaces contained in the data base. This is the first time such data has been available in one place.

The data base has enabled the CDSF to take a more complete look at the systems and their interfaces than has been possible in the past. The CDSF is responsible for notifying the appropriate Army elements to correct potential interface problems before reaching the field.

The TRADOC CDSF is designed to overcome these support problems. The CDSF is the source of software analytical and technical ability to perform development, maintenance, application and training functions for software support. The CDSF is the principal organizational interface between the material developer and the user communities.

The U.S. Army Intelligence Center and School is the TRADOC proponent for the tactical intelligence/electronic warfare battlefield functional area. A CDSF has been established at Fort Huachuca, Ariz.

In order to establish the CDSF, USAICS identified the need for a more complete knowledge of software, including what was fielded, what functions it performed, and what other government-owned software exists.

The need to analyze and evaluate algorithms, both existing and proposed, to ensure a theoretical foundation for these key elements of tactical automated systems was also identified.

Another area where the CDSF has been active is algorithm analysis. An algorithm is "a process or rules for calculating something." However, it need not be limited to calculations—rules for making a decision also constitute an algorithm and these appear frequently in I/EW systems.

JPL, with subject matter expertise provided by the CDSF, has completed a number of algorithm analysis reports. Among these is a methodology which gives an extensive set of guidelines on how to perform analysis of algorithms or manage an analysis effort. It was written specifically for those without a computer background. Work is also being done on collecting a library of existing algorithms in standardized format, and investigating the mathematics of several types of algorithms common to I/EW systems.

One of the difficulties of introducing an ADP system into an organization is designing a system that can be used by the operator with a minimal amount of training and difficulty. Certain features of hardware are designed specifically for this purpose, such as specially designed keyboards, joysticks, color monitors, etc.

This relationship of how well man can interoperate with the computer is called "man/machine interface." The

CDSF has undertaken the task of creating a data base of man/machine interfaces.

Collecting and analyzing these existing interfaces will promote better requirements and more meaningful training and "friendlier" automated systems. Another purpose of the data base is to capture data regarding existing and future systems in an effort to construct a "prototype" of optimum attributes based on the tasks to be performed by the system.

The model will then be compared to an actual or proposed system to determine the functionality of the man/machine attributes of the system. The CDSF can then evaluate existing and future systems and recommend appropriate changes to ensure that it is as user friendly compatible as possible.

The CDSF also acts as the TRADOC focal point for Microfix, a "quick reaction capability" that will provide microcomputers to the field for the automation of certain intelligence functions.

FORSCOM, the microfix executive agent, will be supported by the CDSF in all aspects of microfix software. Software developed for microfix will be made available to all microfix users. This same software will be incorporated into resident training at USAICS whenever possible to give students exposure to microcomputers and microfix before they arrive at their units. FORSCOM has tasked USAICS with developing application programs to be fielded with microfix.

Another area where the CDSF is lending its expertise is computer assisted instruction. CAI packages are available on a variety of subjects from the principles of ADP to the organization of the Soviet army. They are graphically illustrated and provide the student with periodic exams. If a weakness is discovered, the lesson may be repeated.

As more and more automated battlefield systems are fielded, more support is needed to sustain, modify, or improve their capabilities. This is especially true of computer software—a fact not recognized until quite recently.

The establishment of the CDSF at Fort Huachuca has gone a long way toward supporting automated I/EW systems in the field.

Although much work remains to be done, the substantial progress of the CDSF in the field of software support has enabled the intelligence community to take better advantage of the sophisticated systems available in the Army today.

For further information on the combat developer's support facility contact: Commander, USAICS, ATTN: ATSI-CD-SF, Fort Huachuca, Ariz., 85613, AUTOVON 879-2500/2501, commercial (602) 538-2500/2501.

The Intelligence Center and School now has a hotline in operation 24-hours a day to answer questions concerning software support for automated I/EW systems. The number is AUTOVON 879-3609 commercial (602) 538-3609. Be sure to include your name, unit, phone number and the specific system you have questions about—action will be taken within 24 hours. Calls can include suggestions for enhancements, software problem reports or requests for general information. ★

All Source Analysis System

Throughout history, commanders have sought new and innovative ways to obtain as much information as possible about the enemy. Their success on the battlefield has usually been proportionate to their skill in developing and using intelligence. In an extreme-war situation, it is expected that the enemy would execute a short warning attack to achieve maximum surprise. Such an attack would be characterized by constantly shifting axes of attack, high levels of mobility and lethality, and a battlefield environment so rich in targets that the sensor systems being developed and deployed today will generate extremely large volumes of data in short periods of time. This volume will saturate the current manual tactical processing and analysis facilities, outdistancing the ability of personnel to digest data, filter facts, and provide timely, coherent perceptions of the battlefield situation to the commander.

The need to improve intelligence and electronic warfare support to the operational commander has been jointly translated into a set of Army/Air Force functional requirements, and the Joint Tactical Fusion Program has been designated as the materiel developer. The JTFP will develop, acquire and field systems responsive to the Army requirement for an All Source Analysis System and the Air Force requirement for an Enemy Situation Correlation Element. The service requirements have a high degree of commonality which makes a joint program the most efficient approach. Moreover, the ability of the ground and the air support commander to have a common perception of the Airland Battle makes a common system an operational imperative.

Because of the criticality of achieving an operational capability, an exceptional acquisition process has been authorized for the ASAS/ENSCE systems. The underlying philosophy is to employ exceptional management to streamline the acquisition process for the ASAS/ENSCE systems. This includes streamlined decision making, the use of the California Institute of Technology, Jet Propulsion Laboratory for system engineering and integrations, and an evolutionary development that compliments existing capabilities and capitalizes on field experience with existing systems. Under this program, a baseline ASAS/ENSCE will be fielded early and will provide additional input from the field before the objective system is produced. The object system will be an evolutionary outgrowth of the baseline system and will rely heavily on user units input.

The goal is to produce a baseline ASAS system that is functionally capable of meeting minimum requirements for IEW Command and Control and for Intelligence/Electronic Warfare processing, analysis, fusion and reporting with a mechanism which is dependable and supportable in the field. Functionally, the ASAS will provide automated support to the G2, G3 and CEWI unit commander in the areas of intelligence analysis and production, target analysis, collection management, mission management, electronic warfare support, and operational security support.

The ASAS/ENSCE is being designed to provide secure, automated support via a system that can respond to the fluid environment of the modern battlefield and to the different concepts of employment. Present efforts are focusing on defining the exact functionality of the baseline system, identifying needed improvement in the existing CEWI communications capability, developing a test and evaluation concept, preparing a USAICS training facility and developing a logistics support concept. ★

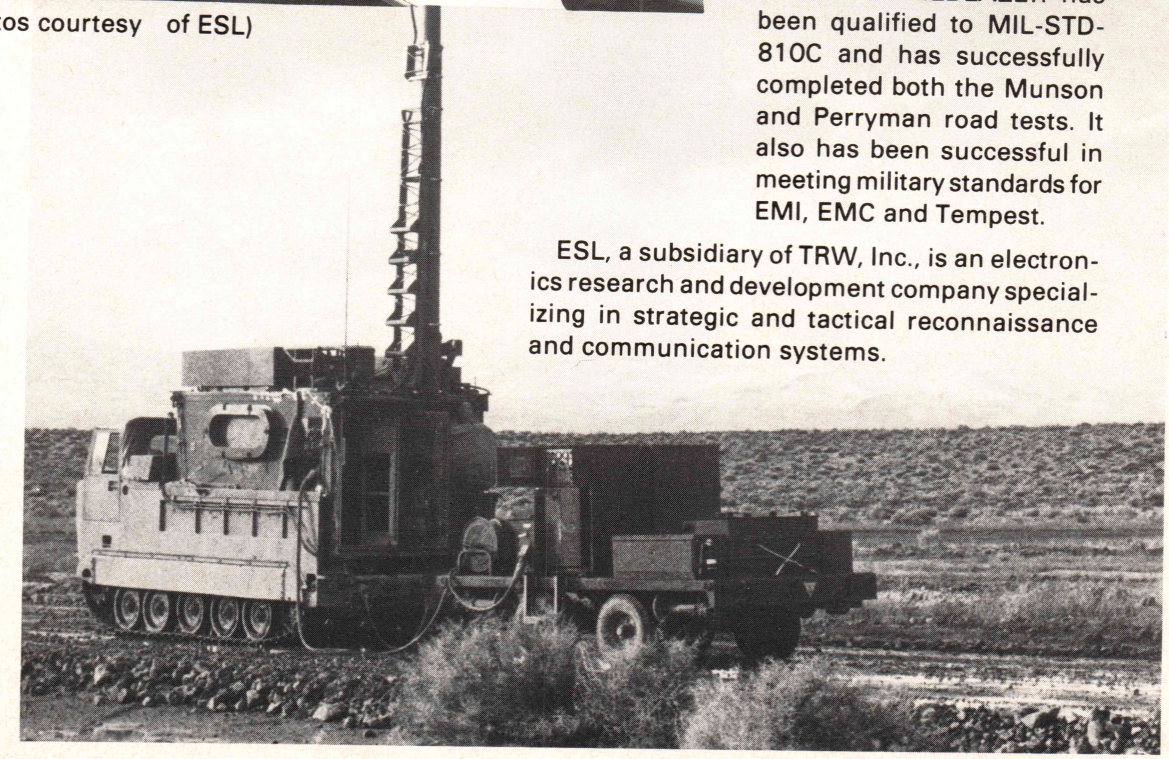
First TRAILBLAZER Delivered

(Photos courtesy of ESL)

Delivery of the first TRAILBLAZER (AN/TSQ-114A) system is the clumination of four years of effort.

TRAILBLAZER is a local or remote-controlled, tactical, ground-based communications intercept and direction finding system. It is designed to provide real-time intelligence and combat information to tactical commanders. Each system consists of two Master Control Stations and three Remote Slave Stations that are tied together with a UHF data link. The Master Control Stations are also linked to a reporting facility. ESL designed and built the electronic direction-finding system and installed it on the Army standard M1015 track vehicle. TRAILBLAZER has been qualified to MIL-STD-810C and has successfully completed both the Munson and Perryman road tests. It also has been successful in meeting military standards for EMI, EMC and Tempest.

ESL, a subsidiary of TRW, Inc., is an electronics research and development company specializing in strategic and tactical reconnaissance and communication systems.



Training Time Management

Capt. Alan S. Taylor

Ask any company commander what his greatest training management problem is and his answer will most likely be allocation of training time. On any given day a commander is usually swamped with a myriad of unforeseen problems, but he still has a responsibility to provide his S3 with a detailed training forecast for a period two to three weeks away. Too often, the commander throws together a training schedule to meet his S3's requirement, with little thought to how that fits into his long range training plan.

The 501st Military Intelligence Battalion, 1st Armored Division, has devised a simple time management technique which, though not perfect, has assisted its unit commanders in better managing of scarce training time. We would like to share this technique with you. The heart of this technique is the time management matrix.

□ Each commander assesses his unit's strengths and weaknesses using the seven categories of time allocation on the matrix.

□ The commander reviews his battalion's training forecast for the upcoming quarter and estimates the total training hours available for each month and for the quarter. Based on his training analysis, he allocates a percentage of his available training hours to each training category for the quarter. He distributes his monthly allocation based on his training forecast. This establishes a goal and should not be considered final.

□ The commander negotiates individually with the battalion commander and S3. This must include an analysis of training directives and/or detractors, commonly referred to as "bullets," for example: Company commander: During ( ) I have ( ) training hours available. However, a number of training bullets will probably decrease my total available training hours and/or dictate how I will spend a portion of that time. For example:

- **To comply with battalion training guidance, I must allocate 10 hours to mandatory subjects, including make-up classes.**
- **A major holiday is coming up this month so I need time allocated for safety briefing and POV inspections.**
- **There's a good chance for a division alert that will cost me at least two-thirds of the training day.**
- **There will be an organizational effectiveness seminar next month that will cost at least one duty day.**
- **We must support an infantry battalion for ten days next month not including preparation, field duty recovery, and compensatory time. Need to determine collective training tasks for this requirement.**
- **We will probably undergo an unannounced battalion maintenance evaluation that will tie up one platoon for half of the day.**
- **Border mission will use up about 16 percent of my available time for next month.**

The commander makes all final adjustments and allocates his training hours for the month. This allocation process allows the commander to ensure he has established a challenging, but realistic game plan.

The commander provides this time allocation to his platoon trainers as training guidance (for example, 1st platoon will allocate 20 hours of technical training during May). Detailed training schedules are closely monitored by the commander, and changes are recorded for later analysis. At the end of the month, the commander meets with platoon leaders to analyze how their training time was actually spent and why. He then meets with

501st BTMS TIME MANAGEMENT

HHOC Staff	CS	TT	MT	MS	GD	RM	SA
OCT PROJ	10	05	08	60	05	10	02
OCT ACT	12	02	02	70	05	07	02
NOV PROJ	20	05	03	60	05	05	02
HHOC OPER	**CS**	**TT**	**MT**	**MS**	**GD**	**RM**	**SA**
OCT PROJ	10	60	10	03	05	10	02
OCT ACT	15	55	10	05	05	08	02
NOV PROJ	20	60	05	03	05	05	02
A CO	**CS**	**TT**	**MT**	**MS**	**GD**	**RM**	**SA**
OCT PROJ	08	40	05	25	03	15	04
OCT ACT	08	37	02	25	05	19	05
NOV PROJ	08	35	06	20	06	20	05
B CO	**CS**	**TT**	**MT**	**MS**	**GD**	**RM**	**SA**
OCT PROJ	20	30	04	13	02	30	01
OCT ACT	18	27	02	16	02	25	10
NOV PROJ	17	20	04	16	08	25	10
C CO	**CS**	**TT**	**MT**	**MS**	**GD**	**RM**	**SA**
OCT PROJ	05	08	05	65	05	10	02
OCT ACT	05	10	10	51	05	11	08
NOV PROJ	05	10	05	54	08	10	08

CS-common skills
TT-technical training
MT-maintenance training
MS-mission support
GD-garrison details
RM-required maintenance
SA-soldier activities

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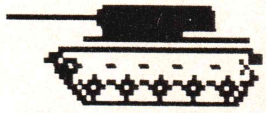
the battalion commander to provide feedback on how close he came to meeting his projection for the past month. Any shortfalls are analyzed to determine exact causes as well as measures to prevent future occurrences. The process is then repeated for the next month.

Using this technique of time allocation can provide commanders with an insight into the construction of weekly training and allows commanders to establish contacts with their trainers as to how his soldiers will spend their time. This technique allows trainers some flexibility in changing scheduled training, but still requires them to achieve an ultimate goal. For example, a unit plans to use 15 percent of their training time for technical training and 10 percent for common skills training. During the month it spends 12 percent of its time on technical training and 12 percent on common skills training. During the following month, the unit commander can decrease required common skills training by 2 percent and increase technical training by 3 percent. A critical requirement for this technique to be successful is that the battalion commander and his S3 act as buffers to "safeguard" the time allowed to their company commanders.

This technique is subjective in nature and an approximation of how a unit spends its time. It should be based on estimations and each commander can decide on how to actually "track" how training hours are spent. In the 501st Military Intelligence Battalion, training management is a responsibility actively shared by the battalion commander, the S3, and unit commanders. Time management is critical if the analyze-provide-conduct phases of BTMS are to be successfully accomplished. ★

Capt. Alan S. Taylor is a graduate of Clemson University and has attended the Military Intelligence Basic and Advanced Courses. He has served as a battalion S2 with the 82nd Airborne Division, as well as platoon leader, company executive officer, and battalion maintenance officer with the 313th CEWI Battalion. He is currently assigned to the 501st Military Intelligence Battalion, 1st Armored Divison, in West Germany.



Cryptocorner

by Walter B. Howe

In this issue we return to the basics of cryptanalysis. The first problem is an easy one to get you started, even if you have never tried a cryptogram before. The problem gives you correct work lengths and punctuation. Use the short words and the contracted word to get you started. Look for familiar words with repeated letters. The system also uses a structured alphabet. List the plain text letters A through Z and when you figure out a letter, write the cipher text letter beneath the plain text letter to reconstruct the alphabet. You will find that the alphabet construction can help you recover more letters.

Y C D D G Y Y J C Q D X E V Z A T A Q E Y M Y

V X U I M F G Y M Z Y U P T X G P A X F-

Z L G J G G Q M T K E U C ' I G Z X M C S V L G F,

Z L G I M D Z U X E E U C Y D U X G

The second problem is much more difficult. The words are much harder to recognize, but there are a few chinks in its armor. Try the repeated word-ending in lines three and four and work from there. If all fails, the alphabet is similar to that of the first problem, differing only in the alignment of the plain text and cipher text letter sequences against each other.

F E G W X U B R B E Q I U P D

U L O S F M E G B F E Y I-

K E B C Y H Q I O F U X E G B D,

Q G B H Y H W P Y T H Y W X F E Y I.

solution on page 35.

ETAS

The Elevated Target Acquisition System is a multifaceted sensor system being developed as a brigade system to support AirLand Battle 2000 operations. It is scheduled to replace the ground surveillance radars currently organic to the Field Artillery Target Acquisition and Combat Electronic Warfare Intelligence organizations.

The ETAS is being built with both proven and developmental electro-optic, laser, radar, and electronic security measures sensor technologies. Some of the sensors will be passive and some will be active; all will be mounted on a stabilized masthead that can be elevated to a height of 20 meters. In light divisions, ETAS will be mounted in a trailer, of undetermined size, and towed by one of the Army's new high mobility multi-purpose wheeled vehicles.

The electro-optic portion of ETAS will consist of a daylight, high resolution television camera with a zoom-type lens, a laser range finder, and a thermal imaging infrared observation device with characteristics resembling those of the AN/UAS-11 Night Observation Device, Long-Range. The associated signal processing will perform the functions for automatic target detection, screening, and tracking. In turn, the operator will be able to select specific targets from those being displayed at the operator's console, determine their location, and report them with accuracies needed for effective first round fire by field artillery.

The radar in the system will operate in the KU-band and share the stabilized masthead with the electrooptics sensors. It will use "low probability of intercept" technology and be able to detect moving targets, such as tanks and helicopters, to ranges of 20 kilometers with the accuracy needed for long-range artillery fire missions. The signal processing for the radar's integration with the electro-optics will provide automatic target detection and tracking; helicopter, tracked and wheeled vehicle, and personnel classifications; and the collection of targeting data such as target type, size/ quantity of targets, current location and if the targets are moving, the speed and direction of movement and its predicted arrival time at some future location along its apparent route of march.

An ESM sensor for the detection of enemy air defense radar emissions will also be a part of the mast-mounted multisensor package. It will possess sufficient line-of-bearing accuracy to cue the other onboard sensors within their fields of view. In turn, the cued sensor will be able to acquire and report the necessary location data on such targets for interdiction by priority fires. On those occasions when the enemy emitter location cannot be acquired by onboard sensor(s), the line-of-bearing data will be used to cue other ETAS vehicles so that their sensors can enter the search for the emitting target.

The signal processing for the entire system will be capable of automatic target detection, classification, and identification; the elimination of target reporting redundancies; and display of situation oriented information. When the man-machine interface via the operator's interactive display is combined with the signal processing capabilities, ETAS will almost be a page out of the book on popular, current-day, space war video games.

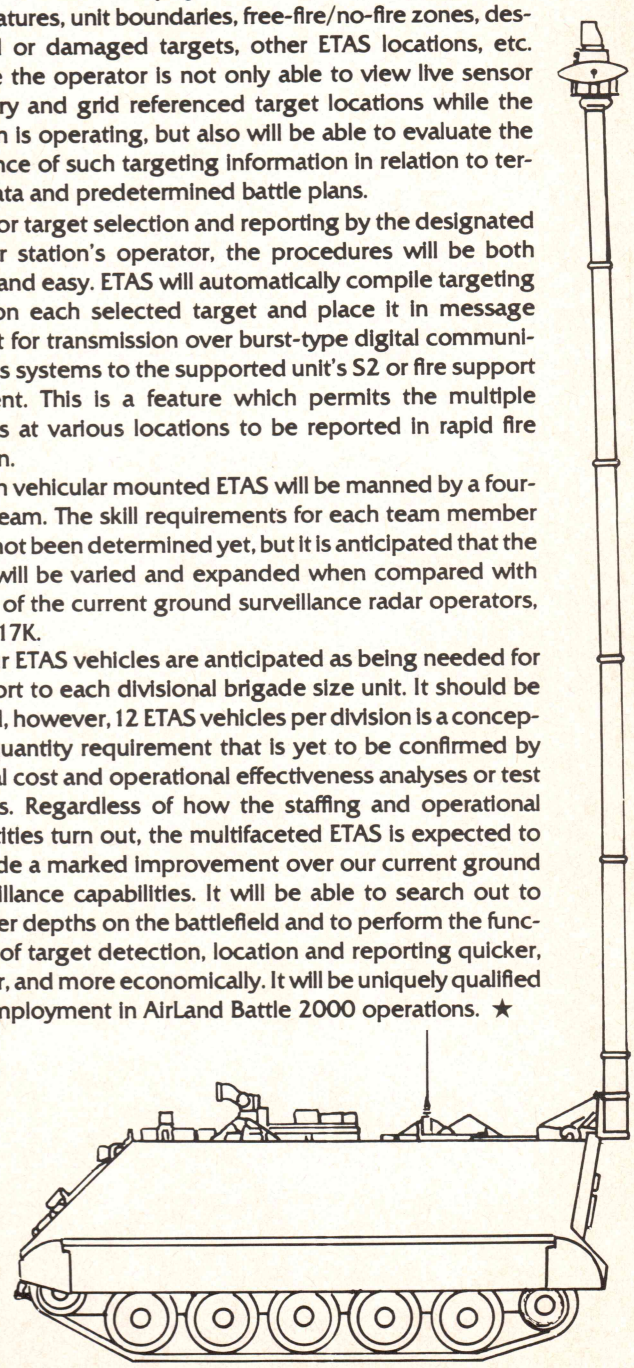
It will enable the targeting data acquired and displayed on the interactive display at each ETAS to be simultaneously transmitted, correlated, and entered on the interactive display of any one of the other nearby ETASs which may be designated as the master ETAS station. In other words, the same targets acquired by two or more ETASs are visually displayed as one superimposed on the master station's interactive display.

It is an electronic technique called "netting." As an extension to the netting technique, the operator's console will also permit the operator to enter pertinent information on the interactive display such as road nets, bridges, terrain features, unit boundaries, free-fire/no-fire zones, destroyed or damaged targets, other ETAS locations, etc. Hence the operator is not only able to view live sensor imagery and grid referenced target locations while the system is operating, but also will be able to evaluate the presence of such targeting information in relation to terrain data and predetermined battle plans.

As for target selection and reporting by the designated master station's operator, the procedures will be both quick and easy. ETAS will automatically compile targeting data on each selected target and place it in message format for transmission over burst-type digital communications systems to the supported unit's S2 or fire support element. This is a feature which permits the multiple targets at various locations to be reported in rapid fire fashion.

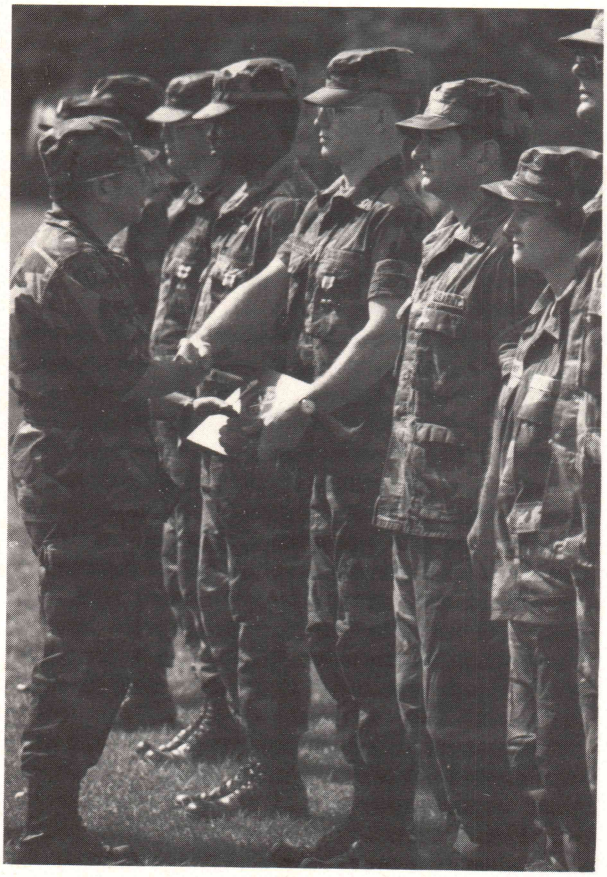
Each vehicular mounted ETAS will be manned by a four-man team. The skill requirements for each team member have not been determined yet, but it is anticipated that the skills will be varied and expanded when compared with those of the current ground surveillance radar operators, MOS 17K.

Four ETAS vehicles are anticipated as being needed for support to each divisional brigade size unit. It should be noted, however, 12 ETAS vehicles per division is a conceptual quantity requirement that is yet to be confirmed by formal cost and operational effectiveness analyses or test results. Regardless of how the staffing and operational quantities turn out, the multifaceted ETAS is expected to provide a marked improvement over our current ground surveillance capabilities. It will be able to search out to greater depths on the battlefield and to perform the functions of target detection, location and reporting quicker, better, and more economically. It will be uniquely qualified for employment in AirLand Battle 2000 operations. ★



USAISD Notes

Military Intelligence Award



Sgt. Charles S. Pendergraph III receives the commander's plaque for operational excellence during an awards cermony at Fort Devens.

Sgt. Charles S. Pendergraph III received the Intelligence and Security Command Commander's Plaque for Operational Excellence on July 22. The award, given annually to one military intelligence soldier, was presented by Brig. Gen. Sidney T. Weinstein, commander of U.S. Army Intelligence Center and School, Fort Huachuca, Ariz.

The award recognizes Pendergraph's outstanding duty performance.

Pendergraph is a 1980 graduate of the University of North Carolina at Chapel Hill with a degree in mathematics. His parents, Mr. and Mrs. Charles S. Pendergraph Jr. of Durham, N.C., attended the presentation ceremony at Fort Devens, Mass.

For his work, Pendergraph also was awarded the Meritorious Service Medal. "His devotion to duty, technical expertise and professional attitude made him an extremely valuable asset," the citation reads. It is unusual for a soldier of Pendergraph's age and rank to receive this medal, as senior non-commissioned and upper-level commissioned officers are the more usual recipients.

Pendergraph is now an instructor in telemetry collection and analysis at U.S. Army Intelligence School, Fort Devens.

Revolution in Morse Training

by Major Montgomery Mathias

Soon to arrive at Fort Devens, in great quantity, are Morse Intercept Position Simulators. The facilities represent state-of-the-art for instructing 05H and other personnel in manual Morse code. MIPS replaces the old MCT-4 systems that have presented Morse code instruction to over 13,000 students during the past decade.

In addition to providing the newest computer technology, MIPS will incorporate an innovative training strategy that has been characterized as "revolutionary." Rather than learning manual Morse code in the traditional manner or responding to Morse characters at ever-increasing speeds, the MIPS concepts emphasize perceptual learning that significantly contrasts with the analytical approach used over the last 14 years.

To earn the MOS of 05H10, students are required to learn Morse characters and respond to Morse signals at a minimum rate of 20 groups per minute. Training strategies teach the basic characters, and over a period of time, increase their speeds until the target level of 20 GPM is reached. (At this point, the 05H10 student is provided additional classes on Morse chatter, special characters, regional Morse patterns, and the like that complete his/her MOS training.)

Most Morse students are able to learn the Morse characters within a short period of time. Difficulty often arrives however, when the student reaches the 15 GPM and attempts to move toward the graduation goal of 20 GPM. Attrition rates at 15 GPM and above levels are the largest for the MOS. It is as though a learning plateau is reached at the 15+ level that cannot be overcome by some students, irrespective of how much additional training is given.

The MIPS concept is greatly different. It starts the Morse student at the desired rate of 20 GPM and gradually adds characters to his response repertoire. As MIPS is based on the perception rather than analysis of sounds, students will associate Morse patterns with the Morse character rather than analyzing the "dit" and "dahs" and concluding that these particular sounds represent a specific letter.

In other words, a perception of "dog" would be identified rather than its analytical parts of "D-O-G." This perception-oriented strategy in teaching Morse is perceived as solving or eliminating the plateau effect that has characterized Morse training for some time.

Figure 1 is a comparison of perceptual versus analytical learning strategies. The bottom line represents the analytical program for teaching Morse code. A steady increase over time is noted in the students' ability to pick up code until the 15 GPM is reached. At this point and immediately above, a plateau in learning is reflected that many students cannot overcome.

A perception-oriented learning strategy, as noted in the top line, eliminates this effect. Students start at the 20 GPM level and progress at that level. The elimination of the plateau effect also serves to reduce the frustration many Morse intercept operators experience at the higher speeds.

MIPS is expected to arrive at Fort Devens in the summer of 1984 and gradually replace the MCT-4 equipment. Eight instructor positions and 240 student positions will be received at a cost of over $2 million.

The training time required for teaching manual Morse code is expected to drop as are some instructor manning requirements. Students without great abilities to learn Morse code at the higher speeds will be identified earlier and reclassified to other MOSs.

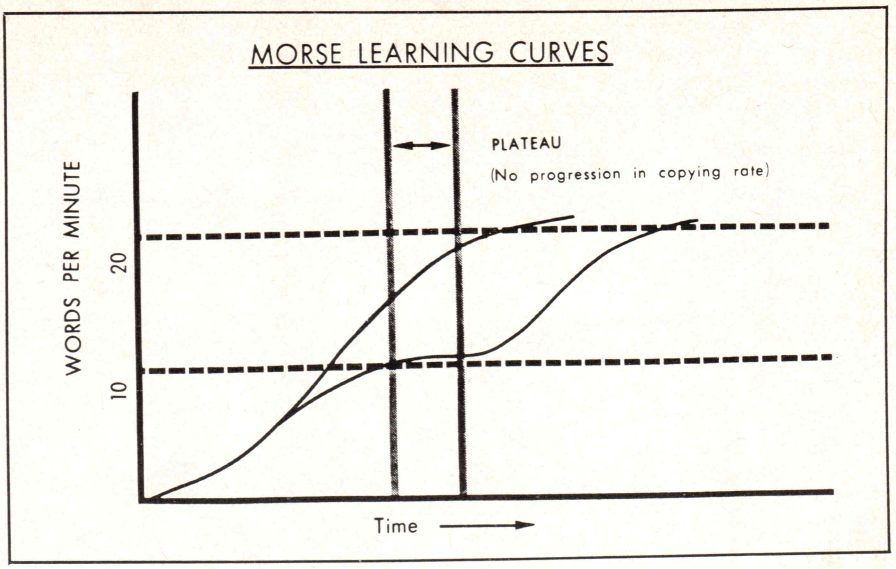


Figure 1

Effects on attrition of Morse students is difficult to gauge. Recent University of Chicago studies indicate, however, that perception-oriented training strategies eliminate the plateau effect that traditionally creates attrition problems for many Morse students.

MIPS is coming, and its effects on USAISD abilities to teach large numbers of Morse students is profound. More students, better trained, in less time is the goal and MIPS is the "revolution" that will help achieve it. ★

Major Mathias is chief of the Morse Division, COMINT Department, USAISD.

Better Training Through Technology

by 2nd Lt. Leo A. Lucas and Mr. Donald M. Harrison, Jr.

Suppose you are a training developer. How would you solve the following typical problems:

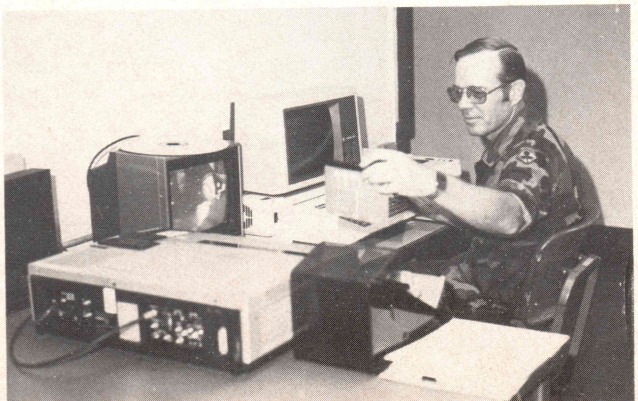
- How to train students on a system either too expensive or of too low a density to have in the school?
- How to train on equipment too fragile for inexperienced students to use?
- How to conduct training when instructor to student ratio requirements are too high?
- How to generate real scenarios in an other than live mission environment?

Would you consider on-the-job training or do you have too much OJT already? How about more TEC tapes or video tapes? They do not offer hands on training and are not adaptable to more than one skill level. How about a training device? Great idea, but can you wait years and obtain necessary finances to acquire the device?

What you need is a sound educational model presented by an advanced, multimedia device. Ideally, this device would offer instruction for all skill levels required to operate or maintain a system. This same device can offer a wide spectrum of training from the novice to the expert.

The student would estimate his skill level initially and the device would lower or raise the level of instruction based on the student's performance. If a student fails to complete a task the device would demonstrate the correct solution with the degree of detail required for that individual to comprehend and accomplish the task. When the student demonstrates proficiency in a task, then the device moves rapidly to the next task, tailoring instructions to the individual's ability.

To adequately present a variety of educational levels, this device must use a variety of input and output mediums. The instructor must see and hear actual equipment, have his



SFC Albert D. Stocker New Systems Division produces courseware at the instructor station

or her attention brought to important points and be able to provide input that is task related.

Production of courseware for this device must be accomplished by the subject matter expert who is familiar with those most difficult training requirements to be mastered. Of course, this courseware must also be produced in a timely manner, say under a year. You could call this device Microprocessor Interface of Multimedia Education. If only you had MIME!

Good news, MIME exists and is now being used as a training system in the Intelligence School. MIME is just as its name implies. It is a computer controlled presentation of multimedia instruction. Instructional sequences are stored both on an optical laser videodisk as video and audio and within the computer as text and graphics.

The student responds to instructions and testing by simulating task completion using touch sensitive inputs such as touch screens or light pens. The training presented to the student is dependent on his or her performance, tailored to the individual student's needs.

Timely training production for a MIME training device is possible through the use of an advanced, user friendly courseware development system. This allows SME's with no programming knowledge to rapidly develop needed training.

You might ask, isn't MIME just more Computer Assisted Instruction that fizzied years ago? Well, yes and no. Yes, MIME has the same concepts of CAI. It is preprogrammed instruction tailored to the studen's performance level with immediate positive reinforcement.

No, MIME is not bound by text and low level graphics of traditional CAI, but offers all types of media and accepting input that is task oriented. MIME systems are capable of presenting real scenarios with video and audio.

It uses text and graphic enhancement to focus the student's attention on key elements. Touch input simulates pushing buttons, turning knobs, throwing switches or whatever is required to operate or maintain equipment. Most importantly, the student sees, hears, and performs the exact tasks he will be required to master.

The Intelligence School is rapidly developing and refining methods to produce MIME courseware. The future technological advances may bring extra dimensions to MIME such as voice recognition, exportation to field units, quicker and more economical production times, and three dimensional simulations.

As a closing note, it is important to stress that while MIME is a valuable educational tool, it will never replace human instruction. It is however, a great training multiplier helping us to train today for tomorrow's Army. ★

2nd Lt. Leo A. Lucas is presently the chief of the Advance Technology Plans and Development Section, Directorate of Training Developments, at the U.S. Army Intelligence School, Devens.

Mr. Donald M. Harrison, Jr., is presently an Education Technician for the Advance Technology Plans and Development Section, Directorate of Training Developments, at U.S. Army Intelligence School, Devens.

Enlisted Notes

Advanced Noncommissioned Officer Course

by Capt.(P) James A. Flesher

The Advanced Noncommissioned Officer Course for Career Management Field 96 (17K, 17M, 96B, 96C, 96D, 96H, 97B, 97C), taught at Fort Huachuca, has been completely revised to better train CMF 96 Senior NCOs in Skill Level 4 and 5 tasks. CMF 98 ANCOC continues to be taught at Fort Devens, Mass.

The first iteration of the revised 10 week, 2 day course was taught July 18 to September 27, 1983, and received considerable praise from both the students and the Training and Doctrine Command evaluators. The first half of the course was developed by the U.S. Army Sergeants Major Academy, and taught by USAICS ANCOC instructors. In addition to affording CMF 96 students the most current instructional information, the first iteration was used to validate the USASMA developed material, which will become the basis for a "common core" of noncommissioned officer instruction, soon to be taught in all ANCOCs Armywide.

Common core subjects taught during this first half of the course included: Effective Writing and Speaking; Enlisted Promotion System; Ethics in Leadership; Military Pay; Duties, Responsibilities and Authority of NCOs; Administrative Separations; Counseling; NBC; Training Management; Orienteering; Military Justice; Defensive Position Preparation; Supply; Map Exercise; Maintenance Management; Duty Roster; Drill and Ceremony; and Comprehensive Examination.

Students found the instruction to be challenging and interesting. Diagnostic examinations administered at the beginning of the course made the students aware of their current knowledge of common military subjects at the Skill Levels 1, 2 and 3. Areas such as NBC, map reading, unit administration, and written composition were shown by the diagnostic examinations to require extra study. As the first half of the course is taught at Skill Level 4, students found themselves having to study hard during the mandatory Saturday morning study periods to refresh Skill Level 2 and 3 information, upon which the Skill Level 4 classroom instruction was based.

Classroom instruction is designed to preclude constant lecturing. Rather, the instructor's function is to encourage the exchange of information, which the students generate through the previous night's required reading, their own experience, and practical exercises.

Extensive evening reading assignments, 0530 physical training, and mandatory Saturday morning study hall combine to challenge ANCOC

students both academically and physically.

The second half of the course deals primarily with the CMF 96 MI specific tasks. Subjects taught during this second half of the course are: Soviet Intelligence Collection Assets; Intelligence Collection Resources; Soviet Threat; Collection Management; Soviet Radio Electronic Combat; Reconnaissance and Surveillance Tasking; Security Manager Duties; Intelligence Reports; Intelligence Preparation of the Battlefield, and Airland Battle.

The capstone of the course is the four-day "DIVEX" Command Post Exercise, which requires the students to perform as members of a division G2 staff during alternating 12-hour shifts.

The number of CMF 96 ANCOC students has been expanded from 168 during fiscal year 83 to 216 during fiscal year 84. However, this increase will not fully correct a continuing shortage of CMF 96 ANCOC student spaces. AR 351-1 requires all E6(P) and E7s to attend ANCOC. Additionally, a few E6s who are not selected for promotion by the E7 promotion board are selected by that board for ANCOC attendance. CMF 96, like all other CMFs Armywide, has more NCOs who should attend ANCOC than the schools and MILPERCEN can support. As ANCOC attendance may one day be a prerequisite for Sergeants Major Academy attendance, E6(P)s and E7s who have not attended ANCOC are urged to contact their MILPERCEN assignments officer and request ANCOC attendance. ★

Capt. (P) James A. Flesher is Chief, Advanced Intelligence Branch, USAICS, where he oversees the MI Warrant Officer Advanced Course, and Soviet Threat instruction.

Officers' Notes

Advanced Civil Schooling

Each year, MI Branch selects officers to attend advanced civil schooling under various programs. This article explains Army and MI Branch policy regarding graduate school including types of programs, prerequisites and selection process.

Two general categories of programs are fully-funded and partially-funded. Under the fully-funded program, the Army provides a permanent change of station move, full pay and allowance, tuition, and up to $600 per year for textbooks and supplies. Under the partially-funded program officers must pay for their own tuition, textbooks and supplies.

Officer quotas for the fully-funded programs are determined by specialty codes and positions validated by the Army Education Review Board. Quotas are no longer based on shortage disciplines. The current policy is that selectees must obtain a degree in an academic discipline which supports one or both of their specialties.

The majority of officers with advanced degrees obtain them either on their own or through a partially-funded program. Officers selected for the degree completion program will attend school by a PCS move or through permissive TDY at no expense to the government.

Officers in the fully-funded or degree completion programs at the graduate level must serve in a validated utilization position for three years to apply the education. Graduates who serve an initial utilization tour will be reutilized on a periodic schedule, consistent with Army requirements and officer professional development needs.

Officers must meet the following prerequisites:

- **Normally have no less than seven and no more than 13 years of commissioned service.**
- **Be fully qualified in the initial specialty at the tactical and non-tactical levels.**
- **Have MI Officer Advanced Course credit.**
- **Possess a top-level military performance record.**
- **Have a good undergraduate degree record.**
- **Send a complete application with supporting documentation to MI Branch.**
- **Be available for a PCS move at the requested school start date.**

Officers must apply for graduate school under the provisions of AR 621-1. Officers are selected by MI Branch through an informal board composed of branch members. Advanced civil school boards will be held in September and April of each year.

Students participating in fully-funded programs are required to obtain a degree which supports one of their two specialties. The following is a list of fiscal year 1984 academic disciplines which support MI specialties.

35 Military Intelligence

EW Systems Technology
Area Studies
ADPS Business
ADPS Engineering
Comptrollership
Operations Research Analysis (Engineering)
Operations Research Analysis (Business)

36 CI/HUMINT/SIGSEC

Comptrollership
ADPS Business

37 SIGINT/EW

EW Systems Technology
Electrical Engineering
ADPS Engineering
ADPS Business
Comptrollership
Operations Research Analysis (Engineering)

For more information or questions contact Maj. David J. Eggle, Professional Development Officer, MI Branch, by writing MILPERCEN, ATTN: DAPC-OPF-M, 200 Stovall Street, Alexandria, Va., 22332, or by calling AUTOVON 221-0143, commercial (202) 325-0144. ★

MIWO Training Development Branch formed at USAICS

by CWO 4 Fernando Garcia

The Military Intelligence Warrant Officer Training Development Branch is a reality. Its staff consists of MI warrant officers representing each of the MI disciplines.

It is the intention of the MIWOs at MIWO TD branch to work in developing a professional military education system that meets the present and future needs of the Army and that keeps in consonance with the Army Training 1990 Action Plan.

A review of education and training for officers study conducted in 1977 recognized the need to design a total officer training system which would provide continuing PME throughout each officer's career. We are working toward that objective.

When we started the RETO driven actions, responsibilities for MIWO training and development were divided; SIGINT MIWO MOS at Fort Devens, general and MIWO MOS at Fort Huachuca. As the RETO efforts progressed, we realized the best interests of the entire MIWO community would best be served by consolidating the RETO efforts at one location, USAICS at Fort Huachuca. This took place February 22, 1982.

So far, we have fielded six surveys (961A, 962A, 964A, 971A, 972A, and 973A). The results of those surveys were received in May. We have also distributed seven others (285A, 982A, 983A, 984A, 985A, 986A, and 988A). Results are expected by January 1984.

While waiting for the survey returns, we are involved in other areas such as assisting the Specialty Proponency Office in resolving MIWO issues of a professional development nature; providing assistance, within our capabilities, in the development of computer assisted instruction and all-source training systems; providing action officers to assist and to chair career management fields committees/ task forces to resolve enlisted CMF issues; and we assist in various other areas that fall within the realms of our technical specialties.

It is because of the latter non-RETO actions in which we are involved that our previous RETO section evolved into the MIWO TD branch. I feel that, although we must continue with the RETO process, we should remain flexible enough to provide assistance, guidance and input to special projects. That is to say, we will do more than one job; as we should.

As far as MIWO training and education programs go, I want to ensure that we develop timely and effective programs from the standpoint of realistic terminal learning objectives and resource costs. To accomplish this, we need the help of MIWOs in the field.

It is important to know that there is a core of people at USAICS who face a tremendous challenge. The objectives for a realistic MIWO PME can only be accomplished if we get input from MIWOs who think selflessly. What is it that we (MIWOs) should know to better perform our jobs so the Army can benefit?

Resource constraints preclude training for every specific contingency in an MOS job requirement (considering the requirements within each of the 13 MIWO MOSs, one can readily see the impracticality of such an undertaking). Every possible alternative must be examined. To this end, input (recommendations, ideas, etc.) from the field is encouraged. Unrestricted thinking is the key, even though only certain ideas can and will be incorporated.

Recommendations should apply to all MIWO MOSs, including such topics as entry level courses for MIWOs, MIWO advanced course, assignment-driven functional courses, recommendations to alleviate present and projected MIWO shortages and accession problems, and any other perceived existing or potential problems. Equally important are ideas not necessarily relating to MIWOs. As long as it will help the Army and military intelligence, send the ideas in to MIWO TD branch. The creation of the MIWO TD branch presents MIWOs with a unique opportunity to have direct influence in resolving any issues that may confront the MIWO Corps and the Army.

The MIWOs to contact are CWO 2 Frank Chadwick, branch chief (964A), CWO 2 Ron Galloni (285A), WO George Allen (962A), and MSgt. (Reserve CWO 4) John Oakley (97B5L, 971A). They can be contacted at the MIWO TD branch by writing Commander, USAICS, ATTN: ATSI-TD-OTW, Fort Huachuca, Ariz. 85613, or calling AUTOVON 879-3658/5932/5943 (commercial area code 602, prefix 538). ★

USAICS Instructors of the Month

The following is a list of Instructors of the Month during 1983.

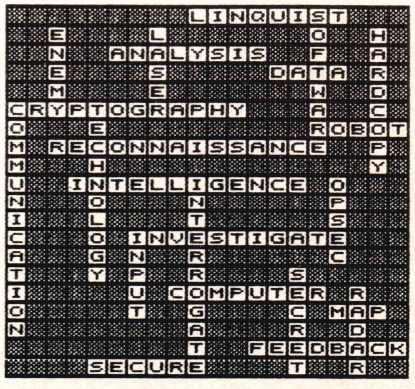
Month	Name
Feb.	GySgt. Randal Bales DSSM
Mar.	SSgt. Albert Yaggi DSSM
Apr.	1st Lt. Jose Albino DTIMS
May	SSgt. Nick Pokrovsky DHI
June	Capt. Alton Woolley DTIMS
July	Capt. Charles Knapp DSSM
Aug.	SFC Carl Johnson DHI
Sept.	SFC Michael Vincent DHI

Departments:

DSSM (Department of Surveillance and Systems Maintenance)

DHI (Department of Human Intelligence)

DTIMS (Department of Tactics, Intelligence, and Military Science)



Proponency Notes

Defense Language Proficiency

DLIFLC will be renorming all existing Defense Language Proficiency Tests to a common functional standard which will provide rating equivalency across languages and government agencies. This will make it possible to determine the foreign language requirement for jobs in the Armed Services regardless of the language, e.g., if it were decided that a tactical interrogator would require a minimum speaking proficiency of level two, that requirement would be constant, whether the language to be used were Korean, Spanish, or any other language.

The test renorming also will mean that future data base summaries of linguistic capabilities will be interpretable in terms of a common standard which will be common for government agencies. The DLPT can still be ordered through normal channels. The new tests, which are currently being developed, will not initially be available for all languages due to the large number of language tests to be revised.

Extension Course

Professional Development Program Extension Courses in six languages (Korean, Russian, Czech, German, Chinese (Mandarin), and Arabic (Egyptian and Syrian) have been completed and distributed to units that have requested them. PDPEC is a nonresident program (designed) for MOS-related language training for Army and Marine interrogators, but is useful for voice interceptors (98G) as well.

These courses can be ordered by units, using DLIFLC Form 877 and a Purchase Order/Requisition, with fund citation. Military personnel may also purchase PDPEC cassette tapes and texts, (at nominal cost) by submitting DLIFLC Form 877 and enclosing appropriate check or money order to the Treasurer of the United States, Commandant, Defense Language Institute, Foreign Language Center, ATTN: ATFL-DT-N, Presidio of Monterey, Calif., 93940.

Cassette tapes cost $1.10; texts are 5 cents per page. If your unit does not maintain the form, you may individually request the blank form from the address above.

Foreign Language Refresher

Foreign Language Maintenance, Refresher and Improvement Courses materials will no longer be developed or produced; however, six-week equivalent refresher/maintenance courses will take their place. As these new programs become available, current FLAMRIC materials will be retired. As a result of this change of policy, current Spanish FLAMRIC materials at DLIFLC have been withdrawn and replaced with the Spanish Refresher/Maintenance course.

Units which have (requested) the Spanish FLAMRIC will (instead) receive the Refresher/Maintenance materials in their place. The Spanish Refresher/Maintenance course consists of 18 instructional booklets with accompanying tapes. The material is available in six binders and can be used for self-instruction as well as group study. The material is designed for refresher training and should maintain the language competency level of DLIFLC Spanish Basic Course graduates or graduates of the equivalent.

Recruiting Program

The Intelligence Center and School is becoming the "clearing house" on dealing with the U.S. Army Recruiting Command Headquarters. We have asked INSCOM, FORSCOM, and WESTCOM to take a hard look at how MI units can better support the Army's recruiting mission. Recruiting Command has published AR 601-2, **Promotional Recruiting Support Programs** effective September 1, 1983. It outlines responsibilities and procedures for the conduct of the TAIR program.

Our aim is to improve MI support to recruiting and ensure the development of appropriate promotional literature to correct the chronic recruiting shortfalls occurring in MI enlisted MOS.

Have a Good Field SOP? SHARE IT!

The ongoing expansion of the military intelligence training and evaluation program, which assists you with MI unit training, requires your input. Unclassified and classified SOPs of MI battalions and companies are sought as baseline information for standardizing unit training products within the Army Training and Evaluation Program, which encompasses the training and evaluation outlines, the MI Army unit test, MI drills, and the technical support package. Our efforts will be directed toward producing a standard unit reference and we intend to cite those units which provide input.

Send in your field SOPs. If your SOP requires special handling, forward through ARFCOS channels to Commander, USASSD (SSO), Fort Huachuca, Ariz. 85613. Other materials may be forwarded to: Commander, USAICS, ATTN: ATSI-TD-CT, Fort Huachuca, Ariz. 85613. Or, if you prefer to call, reach the MI unit trainers on AUTOVON 897-5769/3207.

PROFESSIONAL READER

Intelligence Requirements for the 1980's: Clandestine Intelligence by Roy Godson, New Brunswick, Transaction Books, 1982, 231 pages, $8.50.

In recent years the U.S. intelligence establishment has been the victim of an unprecedented amount of scrutiny and exposure—more than is perhaps desirable for a community which to perform its functions properly must maintain a low profile. Yet, on occasion, material becomes available that allows an unbiased look into the machinery or part of that system and the problems confronting it—material often welcomed by intelligence people, for it allows the formation of an objective and positive picture as to the uses of tax dollars.

Such work is the most recent in a series produced by the Consortium for the Study of Intelligence, titled **Intelligence Requirements for the 80's: Clandestine Collection.** Edited and introduced by Roy Godson, coordinator for the Consortium and an Associate Professor of Government at Georgetown University, the book is a compilation of papers presented at a recent symposium dealing with clandestine intelligence collection. Each essay is written by an individual with a strong background and experience in the specific topic, and is followed by "discussions" from two others with appropriate expertise. A brief account of the general debate that concluded each symposium presentation is added at the end of each section. This construction preserves as nearly as is possible in print the dynamic and insight-producing colloqium format, and aids the reader immensely in drawing objective conclusions about the various topics.

Besides the initial overview and introductions to clandestine collection by Godson, there are six additional subjects covered: "Collection Against the Soviet Union and Denied Areas," which emphasizes the need for a more effective and coordinated approach to collection against the Soviets as their domain grows increasingly difficult to penetrate; "Collection in More Open Regions," discussing the need to shift the emphasis for HUMINT collection from the developed countries of Western Europe to the developing areas of the Third World, where incipient threats to Western security are beginning to require serious attention; "Human Collection in the 80's"—among other things a discussion of the inadequate policies and apparatus for recruitment, training and use of personnel in the HUMINT part of the system; "Technical Collection in the 1980's," a very succinct and informative exposition of national technical systems and the problems to be confronted in coming years; "Wartime Collection Requirements," which ably and with great concern develops the thesis that our intelligence community as a whole has evolved to deal with a peacetime environment and may well not function—or even survive—in war; and finally "Collection in the Intelligence Process," the central theme of which proposes to pare deadwood and redundancy from the intelligence structure by incorporating the principles of capitalism. A system is suggested that would require intelligence users to pay from a designated account for the products they acquire, forcing them not only to be more judicious in obtaining intelligence necessary for their missions, but also more particular as to the quality of product accepted. The book concludes with a discourse on and explanation of the U.S. HUMINT establishment entitled "The Collectors."

Though the entire book is of great value not only to those connected with the intelligence community, but anyone desiring a better understanding of clandestine collection, the chapters dealing with human, technical, and wartime collection seemed to be most thought provoking and to engender the greatest controversy. Of further interest was a theme neither officially nor intentionally a part of the program. As perhaps the leitmotiv of the 70's, the inordinate public attention our intelligence institutions received and the changes in the community that attention wrought must naturally underlie any discussion of the prospects for intelligence in this new decade. One senses lingering traces of the feeling of "being watched"—almost of persecution—developed in reaction to the anti-establishment dogma of the 60's and 70's which was often directed at the intelligence community. But one senses as well that the results of this "persecution" were not all unhealthy, for there are hints of a stronger sense of responsibility, of less parochialism, and more altruism—of an establishment to an extent purged, and a little more lean and agile. One leaves the book with the impression that if during the past decade the pendulum may have swung a long way in the wrong direction, cutting deeply in the process, it is now swinging with increasing momentum in the right direction—that despite knotty problems present and future, it is swinging true. Within and without the intelligence community concerned individuals, such as those of the Consortium, are helping it to move along.

Capt. Paul H. Smith
Co F, USAICS

Hidden Weapons: Allied Secret or Undercover Services in World War II by Basil Collier, Hamish Hamilton, 1982, $35.00.

Basil Collier is an experienced military historian (he wrote the official history of British air defenses in World War II). In ***Hidden Weapons*** he answers a tough question: what was the contribution of intelligence to the Allied effort in World War II? The answers he provides offer useful lessons for military commanders and their operational and intelligence staff officers. In a brief survey of the major phases of the war, Collier tells what the commanders knew, when and how they knew it, and how they used, or ignored, intelligence when they made operational decisions. In his descriptions and judgments of these contributions, Collier clears away much of the fiction and fable regarding intelligence in World War II.

Collier stops short of drawing global conclusions, but here are the key lessons. Signals intelligence, derived from top secret German, Italian, and Japanese codes as read by Allied cryptologists, predicted most major Axis moves once the war was underway. Strategic SIGINT and codebreaking clearly shortened the war. They were no touchstones of truth, however. The Ardennes offensive showed the Allies the folly of relying too heavily on each of the most lucrative sources. Allied security surrounding this "Ultra" secret was phenomenally effective. Wartime leaks were few (and often covered by plausible Allied disinformation), and the secret details of the Ultra were loyally preserved for over thirty years by the tens of thousands in the know.

On all sides in the war, tactical SIGINT saved lives and radio insecurity cost lives. At the same time that armies were exploiting the slips of their opponents, their own radio operators were being read by enemy SIGINT. Poor radio security was easier to exploit than to correct, and tactical radio insecurity persisted despite the parallel expansion of tactical SIGINT capability and experience. In particular, American forces seemed plagued by the dangerous, all too human assumption that "We can do it to the enemy, but they cannot do it to us." SIGINT and signals security did not march in step for any belligerents. The Allies had the benefit of superior SIGINT.

While SIGINT provided the Allies intelligence gold, human intelligence yielded largely dross. A few rare spies with high level sources or multiple contacts delivered some precious intelligence, for example, on German V-weapons, Pearl Harbor naval deployments, Nazi nuclear research, Hitler's attack on Russia, a Nazi surrender in Italy, and the contents of a British Ambassador's safe. These top spies, however, were as often ignored as heeded by their masters. The spymaster had too many mediocre HUMINT reports and gold was rejected with baser materials. In one of the war's rich ironies, the British reaped a bountiful harvest from the deception they planted on the Nazis by turning Hitler's spies around and running them as double agents. These "double cross" agents and top-level SIGINT Ultra intelligence enabled the British to foist falsehoods on the Nazis and then to determine how well the deceptions were working. They worked well; the Allied invasions of Africa, Sicily, and France might have failed without the operations security provided by the British doublecross and Ultra.

Photographic intelligence came of age in World War II. Readable altitude imagery depended on clever engineering: warm air from engine exhausts ducted over camera lens eliminated the frosty blurring of the chill blue yonder. Such innovations quickly overcame the major physical problems. The organization problems were less tractable, and huge staffs grew to handle, at times awkwardly, the enormous PHOTOINT "take," and the huge demand for it. The products repaid the effort; for example, post-mission photos demonstrated the failure of British and American precision bombing (and led to better strategies), photos identified German V-weapon research facilities and pinpointed launch sites, and large parts of the Earth were photo-mapped. But even pictures were sometimes ignored by commanders and staffs—close ups of panzers in Holland were discounted by Allied paratroop commanders. When the First British Airborne Division dropped in the midst of two Nazi tank divisions, the Arnhem span they planned to capture became a "bridge too far." Monty's "left hook" into Germany was parried on the Dutch side of the Rhine.

Hidden Weapons is one of the best summaries of the remarkable beginnings, development, and applications of intelligence as we today know it in the U.S. military. The lessons of intel-

ligence used in World War II are still true, and most definitely worth our attention.

Capt. Frank Stech
97th USARCOM

Secret Police—The Inside Story of a Network of Terror by Thomas Plate and Andrea Darvi, Garden City, New York: Doubleday and Company, Inc., 1981, 458 pages,$17.95.

This book is a study of various secret police forces throughout the world. One author is Thomas Plate, a journalist, who has worked as an editor for American and British newspapers. He wrote an earlier police study, *Commissioner,* in 1978, with Patrick Murphy, formerly Chief of the New York City and Washington, D.C. police departments. Andrea Darvi, a former actress, is Plate's wife.

The authors begin their work with a commentary entitled ***States of Siege,*** which reviews conditions reportedly conducive to the rise of police states. Plate and Darvi continue their ambitious effort with a reference to Joseph Fouche, who was Napoleon Bonaparte's secret police chief. This is an effective touch. Fouche deserves to be rescued from obscurity in the English-speaking world. He was one of the most efficient and successful in the long line of secret policemen from Torquemada of the Spanish Inquisition to Himmler of the Nazi *Sicherheitsdienst* and Beria and Andropov of the KGB.

There is a review of the organizations, recruitment practices, operations and investigative techniques of various secret police forces throughout the world. Coverage ranges from Argentina to Zaire. Secret police in the West, the Soviet Bloc and the Third World are subjected to a reasonably objective and impartial scrutiny. The study is a product of adequate research and well-documented from books, press coverage and interviews. The authors have apparently talked to both secret policemen and their victims. The book is essentially directed against what the authors describe as the rise of the police state mentality.

The principal defect in this study is that it attempts to cover too much of a complex situation ranging from Argentina to Zaire. This overly ambitious effort combined with a basically topical approach covering secret police techniques becomes self-defeating. A discussion on interrogation practices used by DINA in Chile suddenly changes to methods employed by the KCIA in South Korea and concludes with Soviet Bloc techniques. At times it appears that the authors dictate their notes directly from under various topical file headings without editing to meet a publications deadline.

This book still serves a worthwhile purpose, however, in presenting an insight into secret police organizations and activities throughout the world. There are well-developed notes, a bibliography and an index. Professionals in the attache system or training groups should read this study because they may conduct liaison with some of the forces discussed herein. On the other hand, this book also provides background on secret police groups which are operating against American interests.

John H. Carroll

Africa South of the Sahara: The Challenge to Western Security by L.H. Gann and Peter Duignan, Hoover Institution Press, 1981, 128 pages, $9.95.

Gann and Duignan, the authors of this appeal for "a new realpolitik" in U.S. foreign policy toward southern Africa, suggest that in the 1980s the cradle of mankind may become the trigger of World War III. Gann and Duignan perceive the Soivet Union as fully embarked on a program of subversion and control of Africa. Such control would cripple the West, economically and politically. The Soviet challenge, according to the authors, requires a newly formulated U.S. response that avoids the blunders of the Carter Administration and the Andrew Young era.

The Hoover Institution is widely seen as the "think tank" of the Reagan Administration and the views of its senior fellows (two of whom are Gann and Duignan) have tended to become administration policies. Should this be the case with respect to southern Africa (and there are several signs to that effect) American policy for this area can be expected to take the following directions; a more even-handed outlook on violation of human rights, applied equally to black authoritarian regimes as well as white regimes such as South Africa; a more pragmatic outlook toward South Africa, recognizing it as one of the few economically and militarily viable states in the region, and the least susceptible to instability or Communist influence; an active opposition to the Marxist regimes in Angola and Ethiopia and support for local forces fighting against the Soviets, Cubans, and East Germans who prop up these Afro-Marxist states; a heightened concern for the mineral resources of Africa, Western access to them, and the possible threat of a Soviet-inspired interruption of Western supplies or supply routes.

The "winds of change" that brought independence to colonial Africa began to blow 30 years ago. These three decades have not been peaceful, prosperous, or stable for southern Africa. Armed conflict, civil strife, and systematic oppression have made upwards of four and a half million African refugees. Post-colonial policies crippled many nations' agricultures and economies and, with the soaring prices of imports (especially oil), many southern African nations teeter on bankruptcy and are kept afloat only by repeated refinancing of national debts by Western financial centers. Tribalism continues to compete with nationalism as the prepotent political force. In short, conditions have become increasingly favorable for Marxist subversion and continued instability. Gann and Duignan see the Soviets as ready and willing to seize the opportunity. They call for vigorous and sophisticated American response before it is too late.

There is undeniable force to the arguments in this compact pamphlet on the problems and issues facing the United States in Africa today and the need to rethink our policies. But the arguments are sometimes more of the form of debating points than careful and balanced analysis. Gann and Duignan not infrequently play fast and loose with facts and figures to try to make a point. For example, they argue that, since the Soviets in 1976 had 845 nuclear-tipped missiles on submarines and the U.S. stratetic force was 656 missiles, the Soviet submarine-launched ballistic missile force was "superior to the combined U.S., British, and French naval forces." They fail to note that the Russians' missiles each had only a single warhead, while the U.S. missiles were MIRVed with up to 14 warheads each; a significant detail that changes the power advantage decisively to favor the West in 1976. (The Soviets have since begun to MIRV their SLBMs.) Gann and Duignan frequently argue that the Soviet threat to Africa (especially to South Africa) is more severe than was the Nazi threat.

They seemingly forget that a significant proportion of Afrikaners in both World Wars I and II rebelled against siding with the British and fought revolt to support the Germans. Even today there are Afrikaners who will not favor closer ties or a more open approach from Europe or the U.S., even if they were offered. The U.S. cannot count on white South Africans to unanimously applaud a U.S. rapprochement. Much as some Afrikaners dislike the English-speaking world, they have an even greater fear of Communism. The Nazis had many South African supporters; the Soviets have few or none among the Afrikaners. Neither the "front-line" black African states, nor any combination of Afro-Marxist, Soviet, Cuban, or East German supported revolts against South Africa, stands the least chance of succeeding now or in the foreseeable future.

It is hard to see the present situation as comparable to the Nazi threat. In their enthusiasm for a new look in U.S. - South African relations, Gann and Duignan tend to minimize many of the nastier elements of the latter nation's official racist policies. For example, they claim South Africa has not experienced mass expulsions of ethnic minorities. Technically correct; South Africa, in its homelands policy, is deporting ethnic minorities to artificial "homelands" which many of the dispossessed have never seen before. The authors claim the industrial color bar in South Africa has been eliminated, which will be news to Black and Colored South Africans. This is not to say that there are not many signs of softening in South Africa's rigid apartheid, but the progress towards eliminating official racism is not nearly so great as the authors imply.

The authors' main points, however, are well taken. The U.S. does need to ask hard questions of itself. How dependent are we on African resources? How pragmatic should we be with South Africa and can we hope to gain that nation as an ally if we insist on its complete elimination of apartheid? Are the Soviets set on an all-out conquest of Africa and what should we be willing to risk to thwart such a move? There are not easy answers to these questions. The authors do a service in raising them, but the reader interested in seeking answers will have to go far beyond this overpriced pamphlet to find them.

Capt. Frank Stech
97th USARCOM

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525th Military Intelligence Group

Capt. Danny M. Johnson

The 525th Military Intelligence Group was founded April 18, 1946. It was known as the 525th Interrogation Team. It was activated May 1, 1946, at Heidelberg, Germany with one officer and three enlisted. The 525th was assigned to the U.S. Forces, European Theater. On Nov. 6, 1946, the unit was inactivated. On Feb. 6, 1948, it became 525th Headquarters, Intelligence Detachment. Fifteen days later it was activated at Fort Bragg, N.C. The unit was designated General Reserve and assigned to Third Army at zero strength. On March 5, 1948, the 525th was attached to V Corps at Fort Bragg, and on Nov. 18, 1948, was authorized personnel. On May 23, 1949, the 525th became Headquarters, 525th Military Intelligence Platoon, and was assigned to the regular Army. On Aug. 4, 1949, it became the 525th Military Intelligence Service Company, and in December 1950, it became the 525th Military Intelligence Service Group.

On June 19, 1951, the unit became attached to Headquarters, XVIII Airborne Corps. Its authorized strength jumped to 100 officers, 1 warrant officer and 350 enlisted personnel. On Dec. 31, 1951, the 525th became the 525th Military Intelligence Group. Several units were added to the 525th such as censorship, interpreter, Counter Intelligence Corps, Strategic Intelligence Research and Signal (to develop photographs for the aerial photo interpretation teams). During the period 1953 to 1957, many attached and assigned units were detached and reassigned to stations around the world, including Korea, Alaska, France and Germany.

On July 9, 1957, the 525th moved from Fort Bragg to Fort Meade, Md. This move also included the 177th Military Intelligence Detachment (Armed Forces Censorship). The 541st Military Intelligence Detachment became attached to the 525th. The 541st remained attached to the 525th until October 1961 when it was deployed to Germany. The 372d MID, the 531st MID and the 310th MID were all called to active duty. On Aug. 9, 1962, all three units were released from active duty and returned to their home stations. The 541st MID rejoined the 525th in September 1963.

The 525th established and operated the Second U.S. Army Area Intelligence School which trained reserve components and active Army personnel and provided specialized intelligence teams to support active Army and reserve component units.

The 525th moved back to Fort Bragg. Five officers and seven enlisted personnel transferred to Fort Holabird, Md., remaining assigned to the 525th. The 525th became the headquarters for the 1st Military Intelligence Battalion (Aerial Reconnaissance and Surveillance), the 519th Military Intelligence Battalion (Field Army) and five individual Technical Intelligence Detachments. One of the missions of the 525th while at Fort Bragg, was to operate the U.S. Continental Army Command Tactical Intelligence Center.

During the Vietnam crisis, Fort Bragg was selected as the center for intelligence build-up in the U.S. CONTIC. Two new military intelligence groups were established for counterintelligence and human intelligence collection. They were the 135th and the 149th MI Groups respectively.

Part of the 525th was alerted for overseas deployment to Vietnam. They were flown from Fort Bragg to California, in November 1965, and departed Oakland Army Terminal aboard the USNS Geiger on Nov. 4, 1965. On November 28 they arrived at Vung Tau harbor enroute to Ton Son Nhut Air Base. The 1st and 519th MI Battalions followed to Vietnam in December 1965, and were assigned to the 525th on Jan. 1, 1966. While in Vietnam, the 525th was assigned to U.S. Army, Vietnam, and were under the operational control of the MACV J2. In March 1966, the 525th moved to Gia Dinh Province on the west bank of the Saigon River. Additional personnel were deployed to Vietnam in 1967 and 1968. The 135th MI Group and the 149th MI Group arrived in Vietnam in September 1966 aboard the USNS Weigel. On Sept. 25, 1969, the 525th became Headquarters and Headquarters Company, 525th Military Intelligence Group.

While in Vietnam, the 525th participated in 16 campaigns and was decorated with four Meritorious Unit Commendation awards. On March 5, 1973, the 525th returned to the U.S. as a Color Guard Detachment and was inactivated at Oakland Army Base, Calif.

In mid-1974, the U.S. Army Intelligence Agency was established, including the activation of two MI groups to provide counterintelligence support to U.S. Army installations, units and activities in the U.S. On July 1, 1974, the 525th was activated again with its headquarters at Presidio of San Francisco, encompassing the area west of the Mississippi River including Alaska, Hawaii and the Pacific Trust Territories. The group was organized with the headquarters, six field offices, and 19 resident offices.

In January 1977, the 525th was assigned to the U.S. Army Intelligence Security Command. As part of the implementation of the Intelligence Organization and Stationing Study, the 525th was inactivated Jan. 1, 1978, and relieved from assignment to INSCOM.

On May 16, 1979, the 525th was consolidated with the 218th Military Intelligence Detachment and became Headquarters and Operations Company, 525th Military Intelligence Group (Airborne). On June 16, 1979, the Group was activated at Fort Bragg and assigned to the XVIII Airborne Corps.

In July 1944, the 218th MID was activated and assigned to the XVIII Corps where it served in Europe during World War II and earned three campaign streamers for Europe. It was inactivated in October 1945. In October 1947, the 218th Counter Intelligence Corps Detachment became the 249th Counter Intelligence Corps Detachment and was assigned to First Army. In December 1950, it was inactivated at New York. It was redesignated back to the 218th Counter Intelligence Corps Detachment and withdrawn from the Organized Reserve Corps and assigned to the regular Army. On April 30, 1952, it was activated at Fort Holabird, Md., and in January 1958, it became the 218th Military Intelligence Detachment. In June 1952, the 218th was assigned to the XVIII Airborne Corps and in Sept., 15, 1978, was inactivated at Fort Bragg.

The 525th is now organized as a Combat Electronic Warfare Intelligence Group (Airborne). The 525th has the following units: the 224th MI Battalion (Aerial Exploitation) station at Hunter Army Airfield, Ga.; the 319th MI Battalion (Operations) and the 519th MI Battalion (Tactical Exploitation) located at Fort Bragg.

In August 1973, the Forces Command Intelligence Training Detachment was formed to develop an intelligence command post exercise for training all CONUS-based active and reserve component units. The program was expanded in 1974 and the Soviet Orientation Briefing was included in the program. On March 16, 1979, FITD was organized as a FORSCOM TDA unit and assigned to the 525th. FITD's mission is to provide on-site mobile training teams to assist FORSCOM reserve and active component units and maintain a high state of intelligence training and readiness.

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